National Centre for Excellence in the Teaching of Mathematics

Mathematics glossary for teachers in Key Stages 1 to 3

A Department for Education initiative to enhance professional development across mathematics teaching

Introduction

This glossary has been developed by the National Centre for Excellence in the Teaching of Mathematics (NCETM) in response to a request from the Department for Education to support the publication of the new national curriculum for mathematics which will be implemented in schools in September 2014. The definitions refer to the words and terms as they are used in the programmes of study. This document is based on an earlier publication Mathematics glossary for teachers in key stages 1 to 4 published by the Qualifications and Curriculum Authority in 2003.

It is intended to be used alongside the 2014 National Curriculum for teachers to check the meaning of the terms. This glossary is part of a wider suite of support of materials from the NCETM for the new mathematics National Curriculum including a planning tool, videos, progression map and subject knowledge Self-Evaluation tool.

The words to be found in this glossary are of two kinds. The majority of the words relate to mathematics, and the naming of mathematical forms or geometrical constructs and objects. However, there are other words introduced into the curriculum that describe general competences and could in other settings be taken out of a mathematical context. These words are indicated in italics and an attempt is made to indicate what implications these words should have in the context of the mathematics curriculum. Underneath most entries in the glossary there is an indication of which key stage the concept in question is first introduced (though not necessarily the formality of the vocabulary). Obviously, once a concept has been introduced it will in all likelihood reappear at later stages of the curriculum; mathematics once learned does not suddenly go away. Words that are not indicated by a key stage are there to be used at a teacher's discretion.

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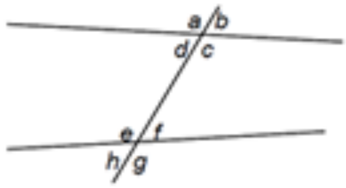
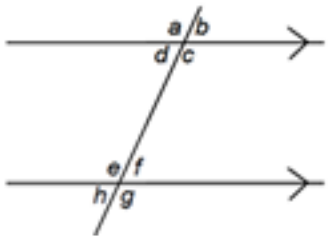
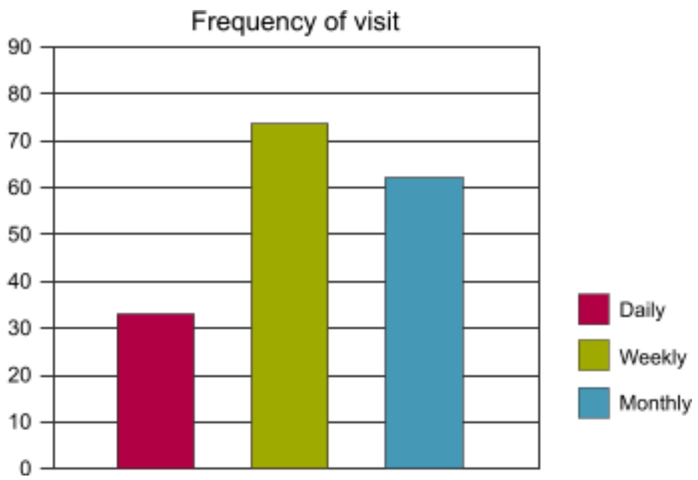
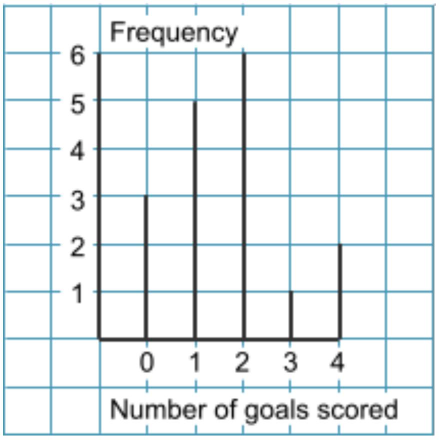
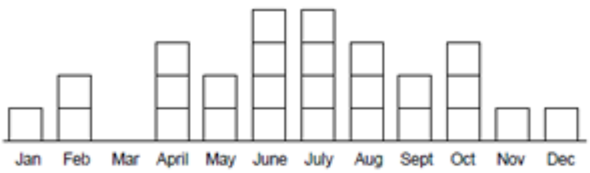
acute angle (KS2)	An angle between 0° and 90°.
Addend (KS1)	A number to be added to another. See also dividend, subtrahend and multiplicand.
addition (KS1)	The binary operation of addition on the set of all real numbers that adds one number of the set to another in the set to form a third number which is also in the set. The result of the addition is called the sum or total. The operation is denoted by the + sign. When we write 5 + 3 we mean 'add 3 to 5'; we can also read this as '5 plus 3'. In practice the order of addition does not matter: The answer to 5 + 3 is the same as 3 + 5 and in both cases the sum is 8. This holds for all pairs of numbers and therefore the operation of addition is said to be commutative. To add three numbers together, first two of the numbers must be added and then the third is added to this intermediate sum. For example, (5 + 3) + 4 means 'add 3 to 5 and then add 4 to the result' to give an overall total of 12. Note that 5 + (3 + 4) means 'add the result of adding 4 to 3 to 5' and that the total is again 12. The brackets indicate a priority of sub-calculation, and it is always true that (a + b) + c gives the same result as a + (b + c) for any three numbers a, b and c. This is the associative property of addition. Addition is the inverse operation to subtraction, and vice versa. There are two models for addition: Augmentation is when one quantity or measure is increased by another quantity. i.e. "I had £3.50 and I was given £1, then I had £4.50". Aggregation is the combining of two quantities or measures to find the total. E.g. "I had £3.50 and my friend had £1, we had £4.50 altogether.
algebra (KS1)	The part of mathematics that deals with generalised arithmetic. Letters are used to denote variables and unknown numbers and to state general properties. Example: a(x + y) = ax + ay exemplifies a relationship that is true for any numbers a, x and y. Adjective: algebraic. See also equation, inequality, formulaformula, identity and expression.

alternate angles (KS3)	Where two straight lines are cut by a third, as in the diagrams, the angles d and f (also c and e) are alternate. Where the two straight lines are parallel, alternate angles are equal. 
analogue clock (KS1)	A clock usually with 12 equal divisions labelled ‘clockwise’ from the top 12, 1, 2, 3 and so on up to 11 to represent hours. Commonly, each of the twelve divisions is further subdivided into five equal parts providing sixty minor divisions to represent minutes. The clock has two hands that rotate about the centre. The minute hand completes one revolution in one hour, whilst the hour hand completes one revolution in 12 hours. Sometimes the Roman numerals XII, I, II, III, IV, V1, VII, VIII, IX, X, XI are used instead of the standard numerals used today.
angle (KS1)	An angle is a measure of rotation and is often shown as the amount of rotation required to to turn one line segment onto another where the two line segments meet at a point (insert diagram). See right angle, acute angle, obtuse angle, reflex angle
angle at a point (KS2)	The complete angle all the way around a point is 360°.
angle at a point on a line (KS2)	The sum of the angles at a point on a line is 180°.
anticlockwise (KS1)	In the opposite direction from the normal direction of travel of the hands of an analogue clock.
approximation (KS2)	A number or result that is not exact. In a practical situation an approximation is sufficiently close to the actual number for it to be useful. Verb: approximate. Adverb: approximately. When two values are approximately equal, the sign ≈ is used.

arc (KS3)	A portion of a curve. Often used for a portion of a circle.
area (KS2)	A measure of the size of any plane surface. Area is usually measured in square units e.g. square centimetres (cm^2), square metres (m^2).
arithmetic mean (KS3)	The sum of a set of numbers, or quantities, divided by the number of terms in the set. Example: The arithmetic mean of 5, 6, 14, 15 and 45 is (5 + 6 + 14 + 15 + 45) ÷ 5 i.e. 17.
arithmetic sequence (KS3)	A sequence of numbers in which successive terms are generated by adding or subtracting a constant amount to the preceding term. Examples: 3, 11, 19, 27, 35, … where 8 is added; 4, -1, -6, -11, … where 5 is subtracted (or -5 has been added). The sequence can be generated by giving one term (usually the first term) and the constant that is added (or subtracted) to give the subsequent terms. Also called an arithmetic progression.
array (KS1)	An ordered collection of counters, numbers etc. in rows and columns.
associative (KS1)	A binary operation $*$ on a set S is associative if $a * (b * c) = (a * b) * c$ for all a, b and c in the set S. Addition of real numbers is associative which means a + (b + c) = (a + b) + c for all real numbers a, b, c. It follows that, for example, 1 + (2 + 3) = (1 + 2) + 3. Similarly multiplication is associative. Subtraction and division are not associative because: 1 – (2 – 3) = 1 – (−1) = 2, whereas (1 – 2) – 3 = (−1) – 3 = −4 and 1 ÷ (2 ÷ 3) = 1 ÷ 2/3 = 3/2, whereas (1 ÷ 2) ÷ 3 = (1/2) ÷ 3 = 1/6.
average (KS2)	Loosely an ordinary or typical value, however, a more precise mathematical definition is a measure of central tendency which represents and or summarises in some way a set of data. The term is often used synonymously with ‘arithmetic mean', even though there are other measures of average. See median and mode

axis (KS2)	A fixed, reference line along which or from which distances or angles are taken.
axis of symmetry (KS1)	A line about which a geometrical figure, or shape, is symmetrical or about which a geometrical shape or figure is reflected in order to produce a symmetrical shape or picture. Reflective symmetry exists when for every point on one side of the line there is another point (its image) on the other side of the line which is the same perpendicular distance from the line as the initial point. Example: a regular hexagon has six lines of symmetry; an equilateral triangle has three lines of symmetry. See reflection symmetry
bar chart (KS1)	A format for representing statistical information. Bars, of equal width, represent frequencies and the lengths of the bars are proportional to the frequencies (and often equal to the frequencies). Sometimes called bar graph. The bars may be vertical or horizontal depending on the orientation of the chart. 

bar line chart (KS3)	Similar to a bar chart, but for categorical data, the width of bars is reduced so that they appear as lines. The lengths of the bar lines are proportional to the frequencies. Sometimes called bar line graph. 
binary operation (KS1)	A rule for combining two numbers in the set to produce a third also in the set. Addition, subtraction, multiplication and division of real numbers are all binary operations.
bisect (KS3)	In geometry, to divide into two equal parts.
Bisector (KS3)	A point, line or plane that divides a line, an angle or a solid shape into two equal parts. A perpendicular bisector is a line at right angles to a line-segment that divides it into two equal parts.
bivariate (KS3)	Involving two random variables; used in statistics as a bivariate distribution.
block graph (KS1)	A simple format for representing statistical information. One block represents one observation. Example: A birthday graph where each child places one block, or colours one square, to represent himself / herself in the month in which he or she was born. 

brackets (KS2)	Symbols used to group numbers in arithmetic or letters and numbers in algebra and indicating certain operations as having priority. Example: 2 x (3 + 4) = 2 x 7 = 14 whereas 2 x 3 + 4 = 6 + 4 = 10. Example: 3(x + 4) denotes the result of adding 4 to a number and then multiplying by 3; (x + 1)2 denotes the result of adding 1 to a number and then squaring the result
cancel (a fraction) (KS2/3)	One way to simplify a fraction down to its lowest terms. The numerator and denominator are divided by the same number e.g. 4/8 = 2/4. Also to 'reduce' a fraction. Note: when the numerator and denominator are both divided by their highest common factor the fraction is said to have been cancelled down to give the equivalent fraction in its lowest terms. e.g.18/30 = 3/5 (dividing numerator and denominator by 6)
capacity (KS1)	Capacity – the volume of a material (typically liquid or air) held in a vessel or container. Note: the term 'volume' is used as a general measure of 3-dimensional space and cannot always be used as synonymously with capacity. e.g. the volume of a cup is the space taken up by the actual material of the cup (a metal cup melted down would have the same volume); whereas the capacity of the cup is the volume of the liquid or other substance that the cup can contain. A solid cube has a volume but no capacity. Units include litres, decilitres, millilitres; cubic centimetres (cm^3) and cubic metres (m^3). A litre is equivalent to 1000 cm^3.
cardinal number (KS1)	A cardinal number denotes quantity, as opposed to an ordinal number which denotes position within a series. 1, 2, 5, 23 are examples of cardinal numbers First (^{1st}), second (^{2nd}), third (^{3rd}) etc denote position in a series, and are ordinals.

<table>
<tr><td>Carroll diagram

(KS1)</td><td>A sorting diagram named after Lewis Carroll, author and mathematician, in which numbers (or objects) are classified as having a certain property or not having that property

Example: Use the diagram below to classify all the integers from 1 to 33

<table>
<tr><td></td><td>Even</td><td>Not even</td></tr>
<tr><td>Multiple of three</td><td>6, 12, 18, 24, 30</td><td>3, 9, 15, 21, 27, 33</td></tr>
<tr><td>Not multiple of three</td><td>2, 4, 8, 10, 14, 16, 20, 22, 24, 26, 28, 32</td><td>1, 5, 7, 11, 13, 17, 19, 23, 25, 29, 31</td></tr>
</table>
</td></tr>
<tr><td>cartesian coordinate system

(KS2)</td><td>A system used to define the position of a point in two- or three-dimensional space:

1. Two axes at right angles to each other are used to define the position of a point in a plane. The usual conventions are to label the horizontal axis as the

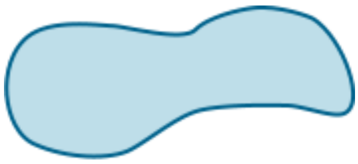
x-axis and the vertical axis as the y-axis with the origin at the intersection of the axes. The ordered pair of numbers (x, y) that defines

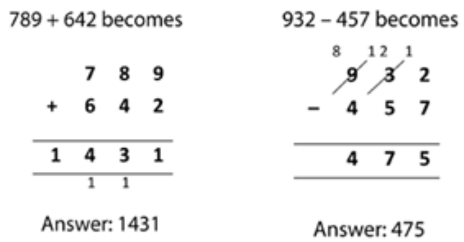
the position of a point is the coordinate pair. The origin is the point (0,0); positive values of x are to the right of the origin and negative values to the left, positive values of y are above the origin and negative values below the origin. Each of the numbers is a coordinate.

The numbers are also known as Cartesian coordinates, after the French mathematician, René Descartes (1596 – 1650).
2. Three mutually perpendicular axes, conventionally labelled x, y and z, and coordinates (x, y, z) can be used to define the position of a point in space.</td></tr>
<tr><td>categorical data

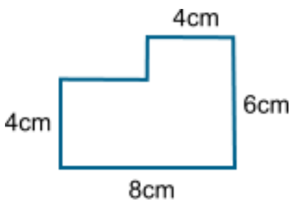
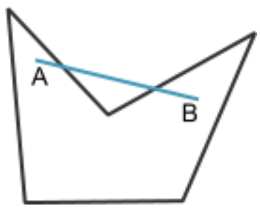
(KS1)</td><td>Data arising from situations where categories (unordered discrete) are used. Examples: pets, pupils’ favourite colours; states of matter – solids, liquids, gases, gels etc; nutrient groups in foods – carbohydrates, proteins, fats etc; settlement types – hamlet, village, town, city etc; and types of land use – offices, industry, shops, open space, residential etc.</td></tr>
</table>

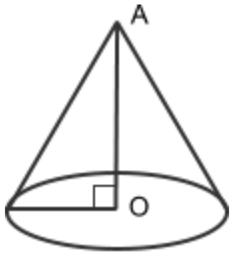
centi– (KS1)	Prefix meaning one-hundredth (of)
Centilitre	Symbol: cl. A unit of capacity or volume equivalent to one-hundredth of a litre.
Centimetre	Symbol: cm. A unit of linear measure equivalent to one hundredth of a metre.
centre (KS2)	The middle point for example of a line or a circle
chart (KS1)	Another word for a table or graph
chord (KS3)	A straight line segment joining two points on a circle or other curve.
chronological (KS1)	Relating to events that occur in a time ordered sequence.
circle (KS1)	The set of all points in a plane which are at a fixed distance (the radius) from a fixed point (the centre) also in the plane Alternatively, the path traced by a single point travelling in a plane at a fixed distance (the radius) from a fixed point (the centre) in the same plane. One half of a circle cut off by a diameter is a semi-circle. The area enclosed by a circle of radius r is πr^2.
circular (KS1)	1. In the form of a circle. 2. Related to the circle, as in circular function.
circumference (KS2)	The distance around a circle (its perimeter). If the radius of a circle is r units, and the diameter d units, then the circumference is $2\pi r$, or πd units.
clockwise (KS1)	In the direction in which the hands of an analogue clock travel. Anti-clockwise or counter-clockwise are terms used for the opposite direction.

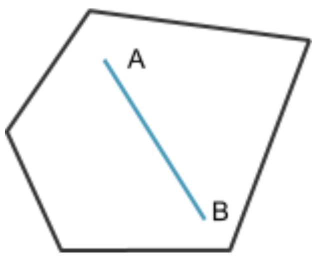
closed (KS3)	Of a curve (often in a plane), continuous and beginning and ending at the same point. Example:  A closed region consists of a closed curve and all the points contained within it. Example: 
coefficient (KS3)	Often used for the numerical coefficient. More generally, a factor of an algebraic term. Example: in the term 4xy, 4 is the numerical coefficient of xy but x is also the coefficient of 4y and y is the coefficient of 4x. Example: in the quadratic equation $3x^2 + 4x – 2$ the coefficients of x^2 and x are 3 and 4 respectively
column (KS2)	A vertical arrangement for example, in a table the cells arranged vertically.
column graph (KS1)	A bar graph where the bars are presented vertically.

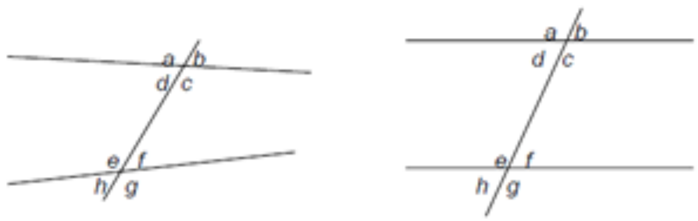
columnar addition or subtraction (KS2)	A formal method of setting out an addition or a subtraction in ordered columns with each column representing a decimal place value and ordered from right to left in increasing powers of 10. With addition, more than two numbers can be added together using column addition, but this extension does not work for subtraction.  (Examples taken from Appendix 1 of the Primary National Curriculum for Mathematics)
combined events (KS3)	A combined (or compound) event is an event that includes several outcomes; for example, in selecting people at random for a survey a compound event could be 'girl with brown eyes'.
common factor (KS2)	A number which is a factor of two or more other numbers, for example 3 is a common factor of the numbers 9 and 30 This can be generalised for algebraic expressions: for example $(x – 1)$ is a common factor of $(x – 1)^2$ and $(x – 1)(x + 3)$.
common fraction (KS1)	A fraction where the numerator and denominator are both integers. Also known as simple or vulgar fraction. Contrast with a compound or complex fraction where the numerator or denominator or both contain fractions.
common multiple (KS2)	An integer which is a multiple of a given set of integers, e.g. 24 is a common multiple of 2, 3, 4, 6, 8 and 12.
commutative (KS1)	A binary operation $\ast$ on a set S is commutative if $a \ast b = b \ast a$ for all a and b $\in$ S. Addition and multiplication of real numbers are commutative where $a + b = b + a$ and $a \times b = b \times a$ for all real numbers a and b. It follows that, for example, $2 + 3 = 3 + 2$ and $2 \times 3 = 3 \times 2$. Subtraction and division are not commutative since, as counter examples, $2 – 3 \neq 3 – 2$ and $2 \div 3 \neq 3 \div 2$.

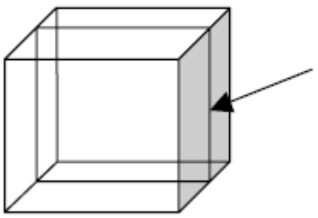
compare (KS1/2/3)	In mathematics when two entities (objects, shapes, curves, equations etc.) are compared one is looking for points of similarity and points of difference as far as mathematical properties are concerned. Example: compare y = x with y = x2. Each equation represents a curve, with the first a straight line and the second a quadratic curve. Each passes through the origin, but on the straight line the values of y always increase from a negative to positive values as x increases, but on the quadratic curve the y-axis is an axis of symmetry and y ≥ 0 for all values of x. The quadratic has a lowest point at the origin; the straight line has no lowest point
compasses (pair of) (KS2)	An instrument for constructing circles and circular arcs and for marking points at a given distance from a fixed point.
compensation (in calculation) (KS1/2)	A mental or written calculation strategy where one number is rounded to make the calculation easier. The calculation is then adjusted by an appropriate compensatory addition or subtraction. Examples: • 56 + 38 is treated as 56 + 40 and then 2 is subtracted to compensate. • 27 × 19 is treated as 27 × 20 and then 27 (i.e. 27 × 1) is subtracted to compensate. • 67 − 39 is treated as 67 − 40 and then 1 is added to compensate.
complement (in addition) (KS2)	In addition, a number and its complement have a given total. Example: When considering complements in 100, 67 has the complement 33, since 67 + 33 = 100
complementary angles (KS3)	Two angles which sum to 90°. Each is the ‘complement’ of the other.
compound measures (KS3)	Measures with two or more dimensions. Examples: speed calculated as distance ÷ time; density calculated as mass ÷ volume; car efficiency measured as litres per 100 kilometres; and rate of inflation measured as percentage increase in prices over a certain time period.

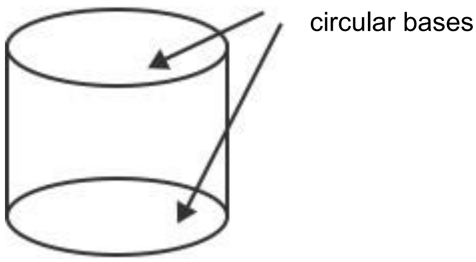
composite shape (KS1)	A shape formed by combining two or more shapes. 
compound interest (KS3)	See simple interest
concave (KS3)	Curving inwards. A concave polygon has at least one re-entrant angle i.e. one interior angle greater than 180o. A line segment joining two points within the polygon may pass outside it.  Example: A concave pentagon. The line segment, joining points A and B within the polygon, passes outside it.
concrete objects (KS1)	Objects that can be handled and manipulated to support understanding of the structure of a mathematical concept. Materials such as Dienes (Base 10 materials), Cuisenaire, Numicon, pattern blocks are all examples of concrete objects.
concentric (KS3)	Used to describe circles in a plane that have the same centre.

cone (KS1)	A cone is a 3-dimensionsl shape consisting of a circular base, a vertex in a different plane, and line segments joining all the points on the circle to the vertex. If the vertex A lies directly above the centre O of the base, then the axis of the cone AO is perpendicular to the base and the shape is a right circular cone. 
congruent (figures) (KS3)	Two or more geometric figures are said to be congruent when they are the same in every way except their position in space. Example: Two figures, where one is a reflection of the other, are congruent since one can be transposed onto the other without changing any angle or edge length.
congruent triangles (KS3)	Two triangles are congruent if one can be exactly superimposed on the other. In practice, this may not be possible, but it is always true that two triangles are congruent if one of these conditions hold: • the lengths of the three sides of one triangle equal the lengths of the three sides of the other (the SSS condition) • each triangle has a right angle, their hypotenuses are equal and one other side is equal (the RHS condition) • the lengths of two sides and the angle between them are the same for the two triangles (the SAS condition) • the length of one side and the angles between this side and the other two sides are the same for both triangles (the ASA condition).
conjecture (KS1)	An educated guess (or otherwise!) of a particular result, which is as yet unverified.
consecutive (KS1)	Following in order. Consecutive numbers are adjacent in a count. Examples: 5, 6, 7 are consecutive numbers. 25, 30, 35 are consecutive multiples of 5 multiples of 5. In a polygon, consecutive sides share a common vertex and consecutive angles share a common side.
constant (KS3)	A number or quantity that does not vary. Example: in the equation $y = 3x + 6$, the 3 and 6 are constants, where x and y are variables.

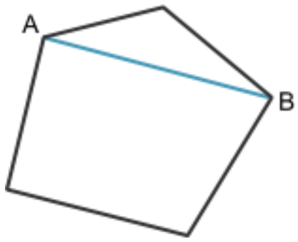
continuous data (KS1)	Data arising from measurements taken on a continuous variable (examples: lengths of caterpillars; weight of crisp packets). Continuous data may be grouped into touching but non-overlapping categories. (Example height of pupils [x cm] can be grouped into 130 ≤ x < 140; 140 ≤ x <150 etc.) Compare with discrete data.
convex (KS3)	Curved outwards. A convex polygon has all its interior angles less than or equal to 180o. The line segment joining any two points, A and B, inside a convex polygon will lie entirely within it. Example:  Convex polygon (pentagon) For a polyhedron to be convex, it must lie completely to one side of a plane containing any face. Compare with concave
convert (KS2)	Changing from one quantity or measurement to another. E.g. from litres to gallons or from centimetres to millimitres etc.
coordinate (KS2)	In geometry, a coordinate system is a system which uses one or more numbers, or coordinates, to uniquely determine the position of a point in space See cartesian coordinate system.
corner (KS1)	In elementary geometry, a point where two or more lines or line segments meet. More correctly called vertex, vertices (plural). Examples: a rectangle has four corners or vertices; and a cube has eight corners or vertices.

correlation (KS3)	A measure of the strength of the association between two variables. High correlation implies a close relationship and low correlation a less close one. If an increase in one variable results in an increase in the other, then the correlation is positive. If an increase in one variable results in a decrease in the other, then the correlation is negative. The term zero correlation does not necessarily imply 'no relationship' but merely 'no linear relationship'
correspondence problems (KS2)	Correspondence problems are those in which m objects are connected to n objects (for example, 3 hats and 4 coats, how many different outfits?; 12 sweets shared equally between 4 children; 4 cakes shared equally between 8 children).
corresponding angles (KS3)	Where two straight-line segments are intersected by a third, as in the diagrams, the angles a and e are corresponding. Similarly b and f, c and g and d and h are corresponding. Where parallel lines are cut by a straight line, corresponding angles are equal. 
cosine (KS3)	See trigonometric functions
count (verb) (KS1)	The act of assigning one number name to each of a set of objects (or sounds or movements) in order to determine how many objects there are. In order to count reliably children need to be able to: • Understand that the number words come in a fixed order • Say the numbers in the correct sequence; • Organise their counting (e.g. say one number for each object and keep track of which things they have counted); • Understand that the final word in the count gives the total • Understand that the last number of the count remains unchanged irrespective of the order (conservation of number)
counter example (KS1)	Where a hypothesis or general statement is offered, an example that clearly disproves it.

cross-section (KS2)	In geometry, a section in which the plane that cuts a figure is at right angles to an axis of the figure. Example: In a cube, a square revealed when a plane cuts at right angles to a face. 
cube (KS1/2)	In geometry, a three-dimensional figure with six identical, square faces. Adjoining edges and faces are at right angles. In number and algebra, the result of multiplying to power of three, n^3 is read as 'n cubed' or 'n to the power of three' Example: Written 2^3, the cube of 2 is (2 x 2 x 2) = 8.
cube number (KS2)	A number that can be expressed as the product of three equal integers. Example: 27 = 3 × 3 × 3. Consequently, 27 is a cube number; it . It is the cube of 3 or 3 cubed. This is written compactly as $27 = 3^3$, using index, or power, notation.
cube root (KS3)	A value or quantity whose cube is equal to a given quantity. Example: the cube root of 8 is 2 since $2^3 = 8$. This is recorded as $\sqrt[3]{8} = 2$ or $8^{1/3} = 2$
cubic centimetre (KS2)	Symbol: cm^3. A unit of volume. The three-dimensional space equivalent to a cube with edge length 1cm.
cubic (KS3)	A mathematical expression of degree three; the highest total power that appears in this expression is power 3.. Examples: a cubic polynomial is one of the type $ax^3 + bx^2 + cx + d$; x^2y is an expression of degree 3.
cubic curve (KS3)	A curve with an algebraic equation of degree three.
cubic metre (KS2)	Symbol: m^3. A unit of volume. A three-dimensional space equivalent to a cube of edge length 1m.

cuboid (KS1)	A three-dimensional figure with six rectangular faces.
cumulative frequency diagram (KS3)	A graph for displaying cumulative frequency. At a given point on the horizontal axis the sum of the frequencies of all the values up to that point is represented by a point whose vertical coordinate is proportional to the sum.
curved surface (KS2)	The curved boundary of a 3-D solid, for example; the curved surface of a cylinder between the two circular ends, or the curved surface of a cone between its circular base and its vertex, or the surface of a sphere.
cyclic quadrilateral (KS3)	A four sided figure whose vertices lie on a circle.
cylinder (KS1)	A three-dimensional object whose uniform cross-section is a circle. A right cylinder can be defined as having circular bases with a curved surface joining them, this surface formed by line segments joining corresponding points on the circles. The centre of one base lies over the centre of the second.  Right cylinder
2-D; 3-D (KS1)	Short for 2-dimensional and 3-dimensional. A figure is two-dimensional if it lies in a plane. A solid is three-dimensional and occupies space (in more than one plane). A plane is specified by ordered pairs of numbers called coordinates, typically (x,y). Points in 3-dimensional space are specified by an ordered triple of numbers, typically (x, y, z).

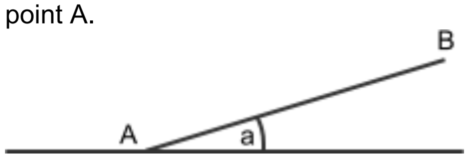
data (KS1)	Information of a quantitative nature consisting of counts or measurements. Initially data are nearly always counts or things like percentages derived from counts. When they refer to measurements that are separate and can be counted, the data are discrete. When they refer to quantities such as length or capacity that are measured, the data are continuous. Singular: datum.
database	A means of storing sets of data.
decimal (KS2)	Relating to the base ten. Most commonly used synonymously with decimal fractions where the number of tenths, hundredth, thousandths, etc. are represented as digits following a decimal point. The decimal point is placed at the right of the ones column. Each column after the decimal point is a decimal place. Example: The decimal fraction 0.275 is said to have three decimal places. The system of recording with a decimal point is decimal notation. Where a number is rounded to a required number of decimal places, to 2 decimal places for example, this may be recorded as 2 d.p.
decimal fraction (KS2)	Tenths, hundredths, thousandths etc represented by digits following a decimal point. Example 0.125 is equivalent to $^1/_{10} + {}^2/_{100} + {}^5/_{1000}$ or $^1/_8$ The decimal fraction representing $^1/_8$ is a terminating decimal fraction since it has a finite number of decimal places. Other fractions such as $^1/_3$ produce recurring decimal fractions. These have a digit or group of digits that is repeated indefinitely. In recording such decimal fractions a dot is written over the single digit, or the first and last digits of the group, that is repeated.
decimal system (KS2)	The common system of numbering based upon powers of ten; Example: 152.34 is another way of writing $1 \times 10^2 + 5 \times 10^1 + 2 \times 10^0 + 3 \times 10^{-1} + 4 \times 10^{-2.}$
decomposition (KS2)	See subtraction by decomposition.
deductive reasoning (KS2)	Deduction is typical mathematical reasoning where the conclusion follows necessarily from a set of premises (as far as the curriculum goes these are the rules of arithmetic and their generalisation in algebra, and the rules relating to lines, angles, triangles, circles etc. in geometry); if the premises are true then following deductive rules the conclusion must also be true.
degree (KS2)	The most common unit of measurement for angle. One whole turn is equal to 360 degrees, written 360° See angle

degree of accuracy (KS2)	A measure of the precision of a calculation, or the representation of a quantity. A number may be recorded as accurate to a given number of decimal places, or rounded to the nearest integer, or to so many significant figures.
denomination (currency) (KS1)	The face value of coins. In the smallest denomination of UK currency (known as Sterling) is 1p and the largest denomination of currency is a £50 note.
denominator (KS2)	In the notation of common fractions, the number written below the line i.e. the divisor. Example: In the fraction ⅔ the denominator is 3.
density (KS3)	A measure of mass per unit volume, which is calculated as total mass ÷ total volume. If mass is measured in kilograms and volume is measured in cubic metres then density is measured in the compound units of kg m^{-3} or kg/m^3
describe (KS1) In mathematics (as distinct from its everyday meaning), difference means the numerical	When the curriculum asks pupils to 'describe' a mathematical object, transformation or the features of a graph, or anything else of a mathematical nature, it is asking pupils to refine their skills to hone in on the essential mathematical features and to describe these as accurately and as succinctly as possible. By KS3 pupils are expected to develop this skill to a good degree.
diagonal (of a polygon) (KS2)	A line segment joining any two non-adjacent vertices of a polygon.  The line AB is one diagonal of this polygon.
diagram (KS1)	A picture, a geometric figure or a representation.

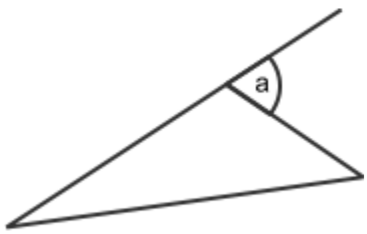
diameter (KS2)	Any of the chords of a circle or sphere that pass through the centre.
difference (KS1)	In mathematics (as distinct from its everyday meaning), difference means the numerical difference between two numbers or sets of objects and is found by comparing the quantity of one set of objects with another. e.g. the difference between 12 and 5 is 7; 12 is 5 more than 7 or 7 is 5 fewer than 12. Difference is one way of thinking about subtraction and can, in some circumstances, be a more helpful image for subtraction than 'take-away' – e.g. 102 - 98
digit (KS1)	One of the symbols of a number system most commonly the symbols 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9. Examples: the number 29 is a 2-digit number; there are three digits in 2.95. The position or place of a digit in a number conveys its value.
digital clock (KS1)	A clock that displays the time as hours and minutes passed, usually since midnight. Example: four thirty in the afternoon is displayed as 16:30.
direct proportion (KS3)	Two variables x and y are in direct proportion if the algebraic relation between them is of the form y = kx, where k is a constant. The graphical representation of this relationship is a straight line through the origin, and k is the gradient of the line.
directed number (KS1)	A number having a direction as well as a size e.g. $^{-}7$, $^{+}10$, etc. Such numbers can be usefully represented on a number line extending in both directions from zero.
direction (KS1)	The orientation of a line in space. e.g. north, south, east, west; up, down, right, left are directions.
disc (KS3)	In geometry, a disc is the region in a plane bounded by a circle The area of a disc of radius r is πr^2.
discrete data (KS3)	Data resulting from situations involving discrete variables Examples: value of coins in pupils' pockets; number of peas in a pod). Discrete data may be grouped. Example: Having collected the shoe sizes of pupils in the school, the data might be grouped into 'number of pupils with shoe sizes 3 – 5, 6 – 8, 9 – 11' etc.

dissection (KS2)	To cut into parts.
distance between (KS2)	A measure of the separation of two points. Example: A is 5 miles from B
distribution (KS3)	For a set of data, the way in which values in the set are distributed between the minimum and maximum values.
distributive (KS2)	One binary operation $\ast$ on a set S is distributive over another binary operation $\bullet$ on that set if $a \ast (b \bullet c) = (a \ast b) \bullet (a \ast c)$ for all a, b and c $\in$ S. For the set of real numbers, multiplication is distributive over addition and subtraction since $a(b + c) = ab + ac$ for all a, b and c real numbers. It follows that $4(50 + 6) = (4 \times 50) + (4 \times 6)$ and $4 \times (50 - 2) = (4 \times 50) - (4 \times 2)$. For division $\frac{(a+b)}{c} = \frac{a}{c} + \frac{b}{c}$ (division is distributive over addition) But $\frac{c}{(a+b)} \neq \frac{c}{a} + \frac{c}{b}$ (addition is not distributive over division) Addition, subtraction and division are not distributive over other number operations.
divide (KS1)	To carry out the operation of division.
dividend (KS1)	In division, the number that is divided. E.g. in 15 ÷ 3, 15 is the dividend See also Addend, subtrahend and multiplicand.
divisibility (KS2)	The property of being divisible by a given number. Example: A test of divisibility by 9 checks if a number can be divided by 9 with no remainder.

divisible (by) (KS2)	A whole number is divisible by another if there is no remainder after division and the result is a whole number. Example: 63 is divisible by 7 because 63 ÷ 7 = 9 remainder 0. However, 63 is not divisible by 8 because 63 ÷ 8 = 7.875 or 7 remainder 7.
division (KS1)	1. An operation on numbers interpreted in a number of ways. Division can be sharing – the number to be divided is shared equally into the stated number of parts; or grouping – the number of groups of a given size is found. Division is the inverse operation to multiplication. 2. On a scale, one part. Example: Each division on a ruler might represent a millimetre.
divisor (KS2)	The number by which another is divided. Example: In the calculation 30 ÷ 6 = 5, the divisor is 6. In this example, 30 is the dividend and 5 is the quotient.
dodecahedron (KS2)	A polyhedron with twelve faces. The faces of a regular dodecahedron are regular pentagons. A dodecahedron has 20 vertices and 30 edges.
double (KS1)	1. To multiply by 2. Example: Double 13 is (13 × 2) = 26. 2. The number or quantity that is twice another. Example: 26 is double 13. In this context, a 'near double' is one away from a double. Example: 27 is a near double of 13 and of 14. (N.B. spotting near doubles can be a useful mental calculation strategy e.g. seeing 25 + 27 as 2 more than double 25.
edge (KS1)	A line segment, joining two vertices of a figure. A line segment formed by the intersection of two plane surfaces. Examples: a square has four edges; and a cuboid has twelve edges.
efficient methods (KS2)	A means of calculation (which can be mental or written) that achieves a correct answer with as few steps as possible. In written calculations this often involves setting out calculations in a columnar layout. If a calculator is used the most efficient method uses as few key entries as possible.

elevation (KS3)	1. The vertical height of a point above a base (line or plane). 2. The angle of elevation from one point A to another point B is the angle between the line AB and the horizontal line through A. Example: in the diagram, the angle a is the angle of elevation of point B from point A.  3. See projection
empty set (KS3)	The set with no members, often denoted by the symbol Ø. E.g. the set of pupils in our class older than 20 or the set of square numbers with an even number of factors are empty sets.
enlargement (KS3)	A transformation of the plane in which lengths are multiplied whilst directions and angles are preserved. A centre and a positive scale factor are used to specify an enlargement. The scale factor is the ratio of the distance of any transformed point from the centre to its distance from the centre prior to the transformation. Any figure and its image under enlargement are similar.
equal (KS1)	Symbol: =, read as 'is equal to' or 'equals'. and meaning 'having the same value as'. Example: $7 – 2 = 4 + 1$ since both expressions, $7 – 2$ and $4 + 1$ have the same value, 5.
equal class interval (KS3)	See grouped (discrete data)
equally likely (KS3)	In an experiment (trial in statistics) the result is the outcome. Two outcomes are equally likely if they have the same theoretical probability of occurrence. Example: when an unbiased coin is tossed the two outcomes 'head' or 'tail' are equally likely.
equation (KS3)	A mathematical statement showing that two expressions are equal. The expressions are linked with the symbol = Examples: $7 – 2 = 4 + 1$ $4x = 3$ $x^2 – 2x + 1 = 0$
equilateral (KS3)	Of equal length - e.g. an equilateral triangle is a triangle with all 3 sides of equal length.

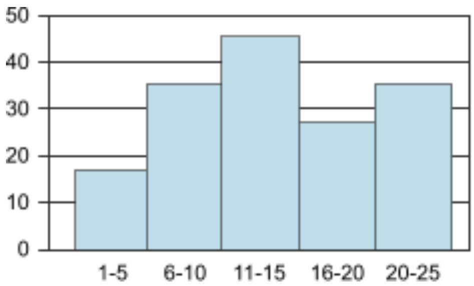
equivalent expression (KS2)	A numerical or algebraic expression which is the same as the original expression, but is in a different form which might be more useful as a starting point to solve a particular problem. Example: $6 + 10x$ is equivalent to $2(3 + 5x)$; 19×21 is equivalent to $(20 – 1)(20 + 1)$ which is equivalent to $20^2 – 1$ which equals 399. Equivalent expressions are identically equal to each other. Often a 3-way equals sign is used to denote 'is identically equal to'.
equivalent fractions (KS1)	Fractions with the same value as another. For example: 4/8, 5/10, 8/16 are all equivalent fractions and all are equal to ½.
error (KS3)	1. The difference between an accurate calculation and an approximate calculation or estimate; the difference between an exact representation of a number and an approximation to it obtained by rounding or some other process. In a calculation, if all numbers are rounded to some degree of accuracy the errors become more significant. 2. A mistake
estimate (KS2)	1. Verb: To arrive at a rough or approximate answer by calculating with suitable approximations for terms or, in measurement, by using previous experience. 2. Noun: A rough or approximate answer.
evaluate (KS2)	Find the value of a numerical or an algebraic expression. Examples: Evaluate $28 \div 4$ by calculating, $28 \div 4 = 7$ Evaluate $x^2 – 3$ when $x = 2$ by substituting this value for x and calculating,$2^2 – 3 = (2 \times 2) – 3 = 4 – 3 = 1$
even number (KS1)	An integer that is divisible by 2.
event (KS3)	A possible outcome of a statistical trial, for example 'heads' when a coin is tossed. A compound (or combined) event is an event that includes several outcomes; for example, in selecting people at random for a survey a compound event could be 'girl with brown eyes'.
exchange (KS2)	Change a number or expression for another of equal value. The process of exchange is used in some standard compact methods of calculation. Examples: 'carrying figures' in addition, multiplication or division; and 'decomposition' in subtraction.

exponent (KS3)	Also known as index, a number, positioned above and to the right of another (the base), indicating repeated multiplication when the exponent is a positive integer. Example 1: n^2 indicates n × n; and ‘n to the (power) 4’, that is n^4 means n × n × n × n. Example 2: since $2^5 = 32$ we can also think of this as ’32 is the fifth power of 2’. Any positive number to power 1 is the number itself; $x^1 = x$, for any positive value of x. Exponents may be negative, zero, or fractional.. Negative integer exponents are the reciprocal of the corresponding positive integer exponent, for example, $2^{-1} = ½$. Any positive number to power zero equals 1; x0 = 1, for any positive value of x. The positive unit fractional powers represent roots, which are the inverse to the corresponding integer powers; thus $8^{1/3} = \sqrt[3]{8} = 2$, since $2^3 = 8$ Note: Power notation is not used for zero, since division by zero is undefined.
exponential (function) (KS3)	A function having variables expressed as exponents or powers e.g. $y = 2^x$ is an exponential function
expression (KS2)	A mathematical form expressed symbolically. Examples: 7 + 3; $a^2 + b^2$.
exterior angle (KS3)	Of a polygon, the angle formed outside between one side and the adjacent side produced. This is the angle that has to be turned at the vertex if you are travelling around a shape e.g. as in LOGO  The angle a is one exterior angle of this triangle.

face (KS1)	One of the flat surfaces of a solid shape. Example: a cube has six faces; each face being a square
factor (KS2)	When a number, or polynomial in algebra, can be expressed as the product of two numbers or polynomials, these are factors of the first. Examples: 1, 2, 3, 4, 6 and 12 are all factors of 12 because 12 = 1 × 12 = 2 × 6 = 3 × 4: (x – 1) and (x + 4) are factors of (x^2 + 3x − 4) because (x – 1)(x + 4) = (x^2 + 3x – 4)
factorise (KS2)	To express a number or a polynomial as the product of its factors. Examples: Factorising 12: 12 = 1 × 12 = 2 × 6 = 3 × 4 The factors of 12 are 1, 2, 3, 4, 6 and 12. 12 may be expressed as a product of its prime factors: 12 = 2 × 2 × 3 Factorising x^2 – 4x – 21: x^2 – 4x – 21 = (x + 3) (x – 7) The factors of x^2 – 4x – 21 are (x + 3) and (x – 7)
facts (KS1)	i.e. Multiplication / division/ addition/ subtraction facts. The word 'fact' is related to the four operations and the instant recall of knowledge about the composition of a number. i.e. an addition fact for 20 could be 10+10; a subtraction fact for 20 could be 20-9=11. A multiplication fact for 20 could be 4 x 5 and a division fact for 20 could be 20÷5 = 4.
financial mathematics	Mathematics related to money: to include costing, pricing, handling money, profit, loss, simple interest, compound interest etc.
fluency (KS1)	To be mathematically fluent one must have a mix of conceptual understanding, procedural fluency and knowledge of facts to enable you to tackle problems appropriate to your stage of development confidently, accurately and efficiently.
foot (KS2)	Symbol: ft. An imperial measure of length. 1 foot = 12 inches. 3 feet = 1 yard. 1 foot is approximately 30 cm.
formal written methods (KS2)	Setting out working in columnar form. In multiplication, the formal methods are called short or long multiplication depending on the size of the numbers involved. Similarly, in division the formal processes are called short or long division. See Mathematics Appendix 1 in the 2013 National Curriculum.

formula (KS2)	An equation linking sets of physical variables. e.g. $A=\pi r^2$ is the formula for the area of a circle. Plural: formulae.
(the) four operations	Common shorthand for the four arithmetic operations of addition, subtraction, multiplication and division.
fraction (KS1)	The result of dividing one integer by a second integer, which must be non- zero. The dividend is the numerator and the non-zero divisor is the denominator. See also common fraction, decimal fraction, equivalent fraction, improper fraction, proper fraction, simple fraction, unit fraction and vulgar fraction.
frequency (KS1)	The number of times an event occurs; or the number of individuals (people, animals etc.) with some specific property.
frequency density	See histogram.
frequency table (KS3)	A table for displaying a set of observations showing how frequently each event or quantity occurs in a statistical trial. This is an example of a frequency distribution, which sometimes can also be represented algebraically or graphically.
function (KS3)	A function is a relation between a set of inputs and a set of permissible outputs with the property that each input is related to exactly one output. An example is the function that relates each real number x to its square x^2. The output of a function f corresponding to an input x is denoted by f(x) (read "f of x"). In this example, if the input is −3, then the output is 9, and we may write f(−3) = 9.
functional relationship (KS3)	See function.
gallon (KS2)	Symbol: gal. An imperial measure of volume or capacity, equal to the volume occupied by ten pounds of distilled water. In the imperial system, 1 gallon = 4 quarts = 8 pints. One gallon is just over 4.5 litres.
general statement (KS1)	A statement that applies correctly to all relevant cases. e.g. the sum of two odd numbers is an even number.

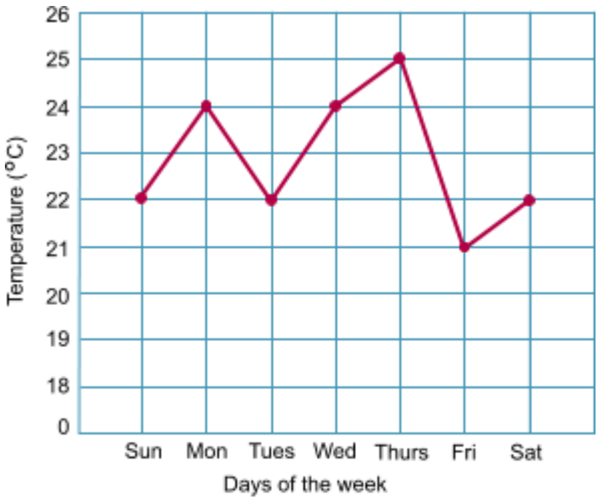
generalise (KS1)	To formulate a general statement or rule.
geometric sequence (KS3)	A series of terms in which each term is a constant multiple of the previous term (known as the common ratio) is called a geometric sequence, sometimes also called a geometric progression. Example 1: 1, 5, 25, 125, 625,…, where the constant multiplier is 5. Example 2: 1, -3, 9, -27, 81,…, where the constant multiplier is -3. A geometric sequence may have a finite number of terms or it may go on forever, in which case it is an infinite geometric sequence. In an infinite geometric sequence with a common ratio strictly between zero and one all the terms add to a finite sum.
geometrical (KS1)	Relating to geometry, the aspect of mathematics concerned with the properties of space and figures or shapes in space.
gradient (KS3)	A measure of the slope of a line. On a coordinate plane, the gradient of the line through the points (x1, y1) and (x2, y2) is defined as (y2 – y1) / (x2 – x1). The gradient may be positive, negative or zero depending on the values of the coordinates.
gram (KS1)	Symbol: g. The unit of mass equal to one thousandth of a kilogram.
graph (KS2)	A diagram showing a relationship between variables. Adjective: graphical.
grid (KS2)	A lattice created with two sets of parallel lines. Lines in each set are usually equally spaced. If the sets of lines are at right angles and lines in both sets are equally spaced, a square grid is created.
grouped (discrete data) (KS3)	Observed data arising from counts and grouped into non-overlapping intervals. Example: score in test / number of children obtaining the score scores 1 – 10, 11 – 20, 21 – 30, 31 – 40, 41 – 50 etc. In this example there are equal class intervals.
heptagon (KS2)	A polygon with seven sides and seven edges.

hexagon (KS2)	A polygon with six sides and six edges. Adjective: hexagonal, having the form of a hexagon
highest common factor (HCF) (KS3)	The common factor of two or more numbers which has the highest value. Example: 16 has factors 1, 2, 4, 8, 16. 24 has factors 1, 2, 3, 4, 6, 8, 12, 24. 56 has factors 1, 2, 4, 7, 8, 14, 28, 56. The common factors of 16, 24 and 56 are 1, 2, 4 and 8. Their highest common factor is 8.
histogram	A particular form of representation of grouped data. Segments along the x- axis are proportional to the class interval. Rectangles are drawn with the line segments as bases. The area of the rectangle is proportional to the frequency in the class.  Where the class intervals are not equal, the height of each rectangle is called the frequency density of the class.
horizontal (KS2)	Parallel to the horizon.
hour (KS1)	A unit of time. One twenty-fourth of a day. 1 hour = 60 minutes = 3600 (60 x 60) seconds.
hundred square (KS1)	A 10 by 10 square grid numbered 1 to 100. A similar grid could be numbered as a 0 – 99 grid.
icosahedron (KS2)	A polyhedron with 20 faces. In a regular Icosahedron all faces are equilateral triangles.

identity (KS3)	An equation that holds for all values of the variables. The symbol ≡ is used. Example: $a^2 – b^2 ≡ (a + b)(a – b)$.
imperial unit (KS2)	A unit of measurement historically used in the United Kingdom and other English speaking countries. Units include inch, foot, yard, mile, acre, ounce, pound, stone, hundredweight, ton, pint, quart and gallon. Now largely replaced by metric units.
improper fraction (KS2)	An improper fraction has a numerator that is greater than its denominator. Example: $^9/_4$ is improper and could be expressed as the mixed number 2¼
inch (KS2)	Symbol: in. An imperial unit of length. 12 inches = 1 foot. 36 inches = 1 yard. Unit of area is square inch, in^2. Unit of volume is cubic inch, in^3. 1 inch is approximately 2.54 cm.
index laws (KS3)	Where index notation is used and numbers raised to powers are multiplied or divided, the rules for manipulating index numbers. Examples: $2^a \times 2^b = 2^{a + b}$ and $2^a \div 2^b = 2^{a – b}$
index notation (KS2)	The notation in which a product such as a × a × a × a is recorded as a^4. In this example the number 4 is called the index (plural indices) and the number represented by a is called the base. See also standard index form
inequality (KS1)	When one number, or quantity, is not equal to another. Statements such as a ≠ b, a<b, a ≤, b, a > b or a≥b are inequalities. The inequality signs in use are: ≠ means ‘not equal to’; A ≠ B means ‘A is not equal to B” < means ‘less than’; A < B means ‘A is less than B’ > means ‘greater than’; A > B means ‘A is greater than B’ ≤ means ‘less than or equal to’; A ≤ B means ‘A is less than or equal to B’ ≥ means ‘greater than or equal to’; A ≥ B means ‘A is greater than or equal to B’
infinite (KS1)	Of a number, always bigger than any (finite) number that can be thought of. Of a sequence or set, going on forever. The set of integers is an infinite set.

inscribed (KS3)	Describing a figure enclosed by another. Examples: a polygon, whose vertices lie on the circumference of a circle, is said to be inscribed in the circle. Where a circle is drawn inside a polygon so that the sides of the polygon are tangents to the circle, the circle is inscribed in the polygon. (In this case the circle is the 'incircle' of the polygon.)
integer (KS2)	Any of the positive or negative whole numbers and zero. Example: …-2, -1, 0, +1, +2 … The integers form an infinite set; there is no greatest or least integer.
intercept (KS3)	1. To cut a line, curve or surface with another. 2. In the Cartesian coordinate system, the positive or negative distance from the origin to the point where a line, curve or surface cuts a given axis. **OR** On a graph, the value of the non-zero coordinate of the point where a line cuts an axis.
interior angle (KS3)	At a vertex of a polygon, the angle that lies within the polygon.
interpret (KS2)	Draw out the key mathematical features of a graph, or a chain of reasoning, or a mathematical model, or the solutions of an equation, etc.
intersect (KS3)	To have a common point or points. Examples: Two intersecting lines intersect at a point; two intersecting planes intersect in a line.
intersection of sets (KS3)	The elements that are common to two or more sets.
interval [0,1] (KS2)	All possible points in the closed continuous interval between 0 and 1 on the real number line, including the end points zero and 1.

inverse operations (KS1)	Operations that, when they are combined, leave the entity on which they operate unchanged. Examples: addition and subtraction are inverse operations e.g. 5 + 6 – 6 = 5. Multiplication and division are inverse operations e.g. 6 × 10 ÷ 10 = 6. Squaring and taking the square root are inverse to each other: $\sqrt{x^2} = (\sqrt{x})^2 = x$; similarly with cube and cube root, and any integer power n and nth root. Some operations, such as reflection in the x-axis, or 'subtract from 10' are self-inverse i.e. they are inverses of themselves
inverse proportion (KS3)	Two variables x and y are inversely proportional if the algebraic relation between them is of the form $xy = k$, where k is a constant; an alternative form of the equation is $y = k/x$ The relations are valid for $x \neq 0$ and $y \neq 0$. In the graph of this function the constraints on x and y indicate that both the x-axis and the y-axis are asymptotes to the curve. If y is inversely proportional to x then y is directly proportional to 1/x. When x is inversely proportional to y then when x is doubled, y is halved, when x is multiplied by 10, y is divided by 10.
irrational number (KS3)	A number that is not an integer and cannot be expressed as a common fraction with a non-zero denominator. Examples: $\sqrt{3}$ and π. Real irrational numbers, when expressed as decimals, are infinite, non-recurring decimals.
isosceles triangle (KS3)	A triangle in which two sides have the same length and consequently two angles are equal. This definition includes an equilateral triangle as a special case – i.e. an equilateral triangle is isosceles
kilo- (KS2)	Prefix denoting one thousand
kilogram (KS2)	Symbol: kg. The base unit of mass in the SI (Système International d'Unités). 1kg. = 1000g.
kilometre (KS2)	Symbol: km. A unit of length in the SI (Système International d'Unités). The base unit of length in the system is the metre. 1km. = 1000m.
kite (KS1)	A quadrilateral with two pairs of equal, adjacent sides whose diagonals consequently intersect at right angles.

least common multiple (LCM) (KS3)	The common multiple of two or more numbers, which has the least value. Example: 3 has multiples 3, 6, 9, 12, 15, 18, 21, 24 …, 4 has multiples 4, 8, 12, 16, 20, 24 … and 6 has multiples 6, 12, 18, 24, 30 …. The common multiples of 3, 4 and 6 include 12, 24 and 36. The least common multiple of 3, 4 and 6 is 12.
length (KS1)	The extent of a line segment between two points. Length is independent of the orientation of the line segment
level of accuracy (KS2)	Often in reference to the number of significant figures with which a numerical quantity is recorded, and made more precise by stating the range of possible error. The degree of precision in the measurement of a quantity.
Line (KS1)	A set of adjacent points that has length but no width. A straight line is completely determined by two of its points, say A and B. The part of the line between any two of its points is a line segment.
line graph	A graph in which adjacent points are joined by straight-line segments. Such a graph is better seen as giving a quick pictorial visualisation of variation between points rather than an accurate mathematical description of the variation between points. 
line of best fit (KS3)	A line drawn on a scatter graph to represent the best estimate of an underlying linear relationship between the variables.
Linear (KS3)	In algebra, describing an expression or equation of degree one. Example: $2x + 3y = 7$ is a linear equation. All linear equations can be represented as straight line graphs.

Litre (KS1)	Symbol: l. A metric unit used for measuring volume or capacity. A litre is equivalent to 1000 cm^3.
long division (KS2)	A columnar algorithm for division by more than a single digit, most easily described with an example: 432 ÷ 15 becomes $\begin{array}{cc\|ccccc} & & & 2 & 8 & \cdot & 8 \\ \cline{3-7} 1 & 5 & 4 & 3 & 2 & \cdot & 0 \\ & & 3 & 0 & \downarrow & & \downarrow \\ \cline{3-4} & & 1 & 3 & 2 & & \\ & & 1 & 2 & 0 & & \\ \cline{3-5} & & & 1 & 2 & & 0 \\ & & & 1 & 2 & & 0 \\ \cline{4-7} & & & & & & 0 \end{array}$ Answer: 28·8 Why should one do division this way, when it can be done much more easily using a calculator? There are two reasons: (a) it helps to understand the process, and can easily be generalised to algebraic division; (b) calculators may go wrong, or may not be available, so the result has to be calculated 'by hand'.
long multiplication (KS2)	A columnar algorithm for performing multiplication by more than a single digit, again best illustrated by an example: 124 × 26 becomes $\begin{array}{cccc} & {\scriptstyle 1} & {\scriptstyle 2} & \\ & 1 & 2 & 4 \\ \times & & 2 & 6 \\ \hline & 7 & 4 & 4 \\ 2 & 4 & 8 & 0 \\ \hline 3 & 2 & 2 & 4 \\ \hline {\scriptstyle 1} & {\scriptstyle 1} & & \end{array}$ Answer: 3224 (Example taken from Appendix 1 of the Primary National Curriculum for Mathematics) Why should one do multiplication this way, when it can be done much more easily using a calculator? There are two reasons: (a) it helps to understand the process, and can easily be generalised to algebraic multiplication; (b) calculators may go wrong, or may not be available, so the result has to be calculated 'by hand'.

many-to-one correspondence (KS3)	A way of describing a function y = f(x), where a value of y is associated with more than one value of x. For example, given the quadratic curve defined by $y = x^2$, the value y = 4 is associated with x = 2 and x = −2, since $2^2 = (-2)^2 = 4$. Other examples include the sine and cosine functions. A less numerical or algebraic example might be mapping the inhabitants of a house to the address of the house, or mapping a particular birthday to a large group of people at a gathering.
mass (KS1)	A characteristic of a body, relating to the amount of matter within it. Mass differs from weight, the force with which a body is attracted towards the earth's centre. Whereas, under certain conditions, a body can become weightless, mass is constant. In a constant gravitational field weight is proportional to mass.
(mathematical) model (KS3)	A mathematical model describes the behaviour of some system (which could be, for example, a physical system or something more abstract such as economic behaviour and so on) through a set of equations or some other mathematics; predictions based on the model can be tested against reality to see how good the 'model' actually is. Mathematics is extremely important in understanding how our world works. The use of models in a vast number of areas from aircraft design, to computer simulations, to survey analysis, to weather forecasting, to studying the rates of absorption of medicines into living tissue, to forensic science, to architecture, to communications and to an unending list, relies completely on developing appropriate mathematical models which allow future behaviour to be predicted, or past behaviour to be understood.
maximum value (in a non-calculus sense) (KS1)	The greatest value. Example: The maximum temperature in London yesterday was 18^{o}C.
mean (KS2)	Often used synonymously with average. The mean (sometimes referred to as the arithmetic mean) of a set of discrete data is the sum of quantities divided by the number of quantities. Example: The arithmetic mean of 5, 6, 14, 15 and 45 is (5 + 6 + 14 + 15 + 45) ÷ 5 i.e. 17. More correctly called the arithmetic mean, as there are also other means in mathematics. See mode and median.
measure (KS1)	1. The size in terms of an agreed unit. See also compound measure. 2. Measure is also used as a verb, to find the size.

measure of central tendency (KS3)	In statistics, a measure of how the values of a particular variable are located in terms of the values collected for a particular sample, or for the relevant population as a whole. In school mathematics up to key stage 4, there are three important measures of central tendency; the (arithmetic) mean, the median and the mode. These are all statistical averages and often one is more useful than another, depending on the spread of the values under consideration.
measuring tools (KS1)	These record numerical quantities of continuous variables, often by comparison with scaled calibrations on the device that is used, or using digital technology. For example, a ruler measures length, a protractor measures angles, a thermometer measures temperature; weighing scales measure mass, a stop watch measures time duration, measuring vessels to measure capacity, and so on.
median (KS3)	The middle number or value when all values in a set of data are arranged in ascending order. Example: The median of 5, 6, 14, 15 and 45 is 14. When there is an even number of values, the arithmetic mean of the two middle values is calculated. Example: The median of 5, 6, 7, 8, 14 and 45 is (7 + 8) ÷ 2 i.e. 7.5. The median is one example of an average. See also <u>mean</u>, <u>arithmetic mean</u> and <u>mode</u>.
mensuration (KS2)	In the context of geometric figures the process of measuring or calculating angles, lengths, areas and volumes.
mental calculation (KS1)	Referring to calculations that are largely carried out mentally, but may be supported with a few simple written jottings.
metre (KS2)	Symbol: m. The base unit of length in SI (Système International d'Unités).
metric unit (KS2)	Unit of measurement in the metric system. Metric units include metre, centimetre, millimetre, kilometre, gram, kilogram, litre and millilitre.
mile (KS2)	An imperial measure of length. 1 mile = 1760 yards. 5 miles is approximately 8 kilometres.
milli– (KS2)	Prefix. One-thousandth.

millilitre (KS2)	Symbol: ml. One thousandth of a litre.
millimetre (KS2)	Symbol: mm. One thousandth of a metre.
minimum value (in a non-calculus sense) (KS1)	The least value. Example: The expected minimum temperature overnight is 6^{o}C.
minus (KS1)	A name for the symbol −, representing the operation of subtraction.
minute (KS1)	Unit of time. One-sixtieth of an hour. 1 minute = 60 seconds
missing number problems (KS1)	A problem of the type 7 = ☐ − 9 often used as an introduction to algebra.
mixed fraction (KS2)	A whole number and a fractional part expressed as a common fraction. Example: 1⅓ is a mixed fraction. Also known as a mixed number.
mixed number (KS2)	A whole number and a fractional part expressed as a common fraction. Example: 2 ¼ is a mixed number. Also known as a mixed fraction.
mode (KS3)	The most commonly occurring value or class with the largest frequency. e.g. the mode of this set of data: 2, 3, 3, 3, 4, 4, 5, 5, 6, 7, 8 is 3 Some sets of data may have more than one mode.
moving average (KS3)	The mean of a set of adjacent observations of fixed size is taken. The mean is calculated for successive sets of the same size to give the moving average. E.g. For example, the moving average of six-month sales may be computed by taking the average of sales from January to June, then the average of sales from February to July, then of March to August, and so on.

<table>
<tr><td>multiple

(KS1)</td><td>For any integers a and b, a is a multiple of b if a third integer c exists so that a = bc

Example: 14, 49 and 70 are all multiples of 7 because 14 = 7 x 2, 49 = 7 x 7 and 70 = 7 x 10.. -21 is also a multiple of 7 since -21 = 7 ×-3.</td></tr>
<tr><td>multiplicand

(KS1)</td><td>A number to be multiplied by another.

e.g. in 5 × 3, 5 is the multiplicand as it is the number to be multiplied by 3.

See also Addend, subtrahend and dividend.</td></tr>
<tr><td>multiplication

(KS1)</td><td>Multiplication (often denoted by the symbol "×") is the mathematical operation of scaling one number by another. It is one of the four binary operations in arithmetic (the others being addition, subtraction and division).

Because the result of scaling by whole numbers can be thought of as consisting of some number of copies of the original, whole-number products greater than 1 can be computed by repeated addition; for example, 3 multiplied by 4 (often said as "3 times 4") can be calculated by adding 4 copies of 3 together:

3 x 4 = 3 + 3 + 3 + 3 = 12

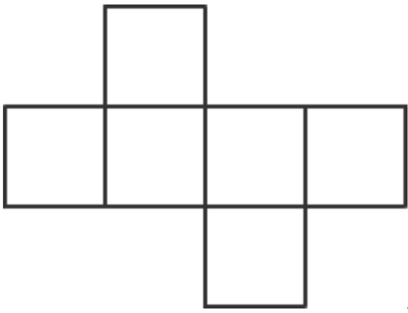
Here 3 and 4 are the "factors" and 12 is the "product".
Multiplication is the inverse operation of division, and it follows that
7 ÷ 5 × 5 = 7

Multiplication is commutative, associative and distributive over addition or subtraction.</td></tr>
<tr><td>multiplication table

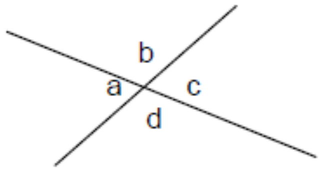
(KS1)</td><td>An array setting out sets of numbers that multiply together to form the entries in the array, for example

<table>
<tr><td>Multipliers</td><td>1</td><td>2</td><td>3</td></tr>
<tr><td>1</td><td>1</td><td>2</td><td>3</td></tr>
<tr><td>2</td><td>2</td><td>4</td><td>6</td></tr>
<tr><td>3</td><td>3</td><td>6</td><td>9</td></tr>
<tr><td>4</td><td>4</td><td>8</td><td>12</td></tr>
<tr><td>5</td><td>5</td><td>10</td><td>15</td></tr>
<tr><td>6</td><td>6</td><td>12</td><td>18</td></tr>
<tr><td>7</td><td>7</td><td>14</td><td>21</td></tr>
</table>
</td></tr>
</table>

multiplicative reasoning (KS2)	Multiplicative thinking is indicated by a capacity to work flexibly with the concepts, strategies and representations of multiplication (and division) as they occur in a wide range of contexts. For example, from this: 3 bags of sweets, 8 sweets in each bag. How many sweets? To this and beyond: Julie bought a dress in a sale for £49.95 after it was reduced by 30%. How much would she have paid before the sale?
multiply (KS1)	Carry out the process of multiplication.
mutually exclusive events (KS3)	In probability, events that cannot both occur in one experiment. When the mutually exclusive events cover all possible outcomes the sum of their probabilities is 1.
natural number (KS2)	The counting numbers 1, 2, 3, … etc. The positive integers. The set of natural numbers is usually denoted by N.
near double (KS2)	See double.
negative integer (KS2)	An integer less than 0. Examples: -1, -2, -3 etc.
negative number (KS2)	1. A number less than zero. Example: − 0.25. Where a point on a line is labelled 0 negative numbers are all those to the left of the zero on a horizontal numberline. 2. Commonly read aloud as ‘minus or negative one, minus or negative two’ etc. the use of the word ‘negative’ often used in preference to ‘minus’ to distinguish the numbers from operations upon them. 3. See also directed number and positive number.

net (KS2)	1. A plane figure composed of polygons which by folding and joining can form a polyhedron.  A net of a cube 2. Remaining after deductions. Examples: The net profit is the profit after deducting all operating costs. The net weight is the weight after deducting the weight of all packaging.
notation (KS1)	A convention for recording mathematical ideas. Examples: Money is recorded using decimal notation e.g. £2.50 Other examples of mathematical notation include $a + a = 2a$, $y = f(x)$ and $n \times n \times n = n^3$,
nth term of a sequence (KS3)	This is the name for the term that is in the n^{th} position starting the count of terms from the first term. The nth term is sometimes represented by the symbol u_n.
number bond (KS1)	A pair of numbers with a particular total e.g. number bonds for ten are all pairs of whole numbers with the total 10.
number line (KS1)	A line where numbers are represented by points upon it.
number sentence (KS1)	A mathematical sentence involving numbers. Examples: 3 + 6 = 9 and 9 > 3
number square (KS1)	A square grid in which cells are numbered in order.
number track (KS1)	A numbered track along which counters might be moved. The number in a region represents the number of single moves from the start.

numeral (KS1)	A symbol used to denote a number. The Roman numerals I, V, X, L, C, D and M represent the numbers one, five, ten, fifty, one hundred, five hundred and one thousand. The Arabic numerals 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9 are used in the Hindu-Arabic system giving numbers in the form that is widely used today.
numerator (KS2)	In the notation of common fractions, the number written on the top – the dividend (the part that is divided). In the fraction ⅔, the numerator is 2.
oblong (KS1)	Sometimes used to describe a non-square rectangle – i.e. a rectangle where one dimension is greater than the other
obtuse angle (KS3)	An angle greater than 90° but less than 180°.
octagon (KS1)	A polygon with eight sides. Adjective: octagonal, having the form of an octagon.
octahedron (KS2)	A polyhedron with eight faces. A regular octahedron has faces that are equilateral triangles.
odd number (KS2)	An integer that has a remainder of 1 when divided by 2.
operation (KS1)	See binary operation
operator (KS2)	A mathematical action: In the lower key stages ‘half of’, ‘quarter of’, ‘fraction of’, ‘percentage of ‘ are considered as operations. In more advanced mathematics there are very many operators that can be defined, for example a ‘linear transformation’ or a ‘differential operator’.

opposite (KS3)	1. In a triangle, an angle is said to be opposite a side if the side is not one of those forming the angle. 2. Angles formed where two line segments intersect.  In the diagram a is opposite c and b is opposite d. Also called vertically opposite angles.
order of magnitude (KS2)	The approximate size, often given as a power of 10. Example of an order of magnitude calculation: $95 \times 1603 \div 49 \approx 10^2 \times 16 \times 10^2 \div (5 \times 10^1) \approx 3 \times 10^3$
order of operation (KS2)	This refers to the order in which different mathematical operations are applied in a calculation. Without an agreed order an expression such as 2 + 3 × 4 could have two possible values: 5 × 4 = 20 (if the operation of addition is applied first) 2 + 12 = 14 (if the operation of multiplication is applied first) The agreed order of operations is that: • Powers or indices take precedent over multiplication or division – 2 × 32 = 18 not 25; • Multiplication or division takes precedent over addition and subtraction – 2 + 3 × 4 = 14 not 20 • If brackets are present, the operation contained therein always takes precedent over all others – (2 + 3) × 4 = 20 This convention is often encapsulated in the mnemonic BODMAS or BIDMAS: Brackets Orders / Indices (powers) Division & Multiplication Addition & Subtraction
orientation (KS3)	How a line segment or other geometric shape is positioned with respect to a coordinate system.
ordinal number (KS1)	A term that describes a position within an ordered set. Example: first, second, third, fourth … twentieth etc.

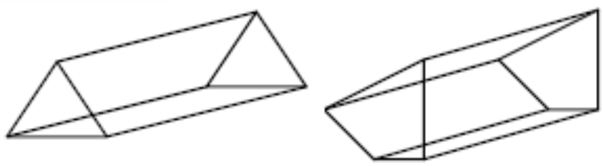
origin (KS2)	A fixed point from which measurements are taken. See also Cartesian coordinate system.
ounce (KS2)	Symbol: oz. An imperial unit of mass. In the imperial system, 16 ounces = 1 pound. 1 ounce is just over 28 grams.
outcome (KS3)	The result of a statistical trial. For example, when a coin is tossed there are two possible outcomes 'head' or 'tail'; when a cubic die is cast there are six possible outcomes if there is a different score on each face. What is meant as the outcome is dependent on what the trial sets out to do, so for example when two normal six-faced dice are rolled if the desired outcomes are the total scores on the two dice then the only possible outcomes are the scores 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 and 12. These scores are not equally likely because the total may occur in different ways with different frequencies.
outlier (KS3)	In statistical samples, an outlier is an exceptional trial result that lies beyond where most of the results are clustered. For example: Six people have the following salaries - £20000, £25600, £2000, £19000, £30000, £160000. The salary of £160000 is clearly out of line with the others and is an outlier. At the other end, £2000 is also well below the central cluster of values and so may also be considered as an outlier.
parallel (KS2)	In Euclidean geometry, always equidistant. Parallel lines, curves and planes never meet however far they are produced or extended.
parallelogram (KS2)	A quadrilateral whose opposite sides are parallel and consequently equal in length.
partition (KS1)	1. To separate a set into subsets. 2. To split a number into component parts. Example: the two-digit number 38 can be partitioned into 30 + 8 or 19 + 19. 3. A model of division. Example: 21 ÷ 7 is treated as 'how many sevens in 21?'
pattern (KS1)	A systematic arrangement of numbers, shapes or other elements according to a rule.

pentagon (KS1)	A polygon with five sides and five interior angles. Adjective: pentagonal, having the form of a pentagon.
percentage (KS2)	1. A fraction expressed as the number of parts per hundred and recorded using the notation %. Example: One half can be expressed as 50%; the whole can be expressed as 100% 2. Percentage can also be interpreted as the operator 'a number of hundredths of'. Example: 15% of Y means 15/100 × Y Frequently, it is necessary to calculate a percentage increase, or a percentage decrease. Sometimes, given the result of an increase or decrease the original whole has to calculated. Example 1: A salary of £24000 is increased by 5%; find the new salary. Calculation is £2400 × (1.05) = £25200 (note: 1.05 = 1 + 5/100) Example 2: The city population of 5 500 000 decreased by 13% over the last five years so that the present population is 5500000 × (0.87) = 4 785 000 (note: 1 – 13/100 = 0.87) Example 3: A sale item is on sale at £560 after a reduction of 20%, what was its original price? The calculation is: original price × 0.8 = £560. So, original price = £560/0.8 (since division is inverse to multiplication) = £700.
perimeter (KS2)	The length of the boundary of a closed figure.
perpendicular (KS3)	A line or plane that is at right angles to another line or plane.
perpendicular distance (KS3)	Given a point P and a line AB, the perpendicular distance of P from AB is the length of the perpendicular PN from the point meeting the line at N.

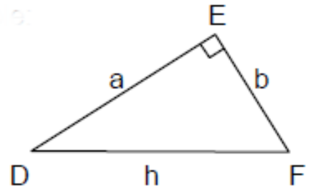
pi (KS3)	Symbol: π. The ratio of the circumference of a circle to the length of its diameter is a constant called π. Π is an irrational number and so cannot be written as a finite decimal or as a fraction. One common approximation for π is 22/7 3.14159265 is a more accurate approximation, to 8 decimal places.
pictogram (KS1)	A format for representing statistical information. Suitable pictures, symbols or icons are used to represent objects. For large numbers one symbol may represent a number of objects and a part symbol then represents a rough proportion of the number.
pictorial representations (KS1)	Pictorial representations enable learners to use pictures and images to represent the structure of a mathematical concept. The pictorial representation may build on the familiarity with concrete objects. E.g. a square to represent a Dienes 'flat' (representation of the number 100). Pupils may interpret pictorial representations provided to them or create a pictorial representation themselves to help solve a mathematical problem.
pie-chart (KS2)	Also known as pie graph. A form of presentation of statistical information. Within a circle, sectors like 'slices of a pie' represent the quantities involved. The frequency or amount of each quantity is proportional to the angle at the centre of the circle.
piece-wise linear function (KS3)	A function that consists of number of straight line functions that have discontinuities (breaks) at certain points. For example, the integer function y =[x], which represents the greatest integer less than or equal to x. At each integer value of x there is a discontinuity as the function jumps to the next integer value.
pint (KS2)	An imperial measure of volume applied to liquids or capacity. In the imperial system, 8 pints = 4 quarts = 1 gallon. 1 pint is just over 0.5 litres.
place holder (KS2)	In decimal notation, the zero numeral is used as a place holder to denote the absence of a particular power of 10. Example: The number 105.07 is a shorthand for $1 \times 10^2 + 0 \times 10^1 + 5 \times 10^0 + 0 \times 10^{-1} + 7 \times 10^{-2}$.
place value (KS1)	The value of a digit that relates to its position or place in a number. Example: in 1482 the digits represent 1 thousand, 4 hundreds, 8 tens and 2 ones respectively; in 12.34 the digits represent 1 ten, 2 ones, 3 tenths and 4 hundredths respectively.
plan (KS3)	A 2-dimensional diagram of a 3-dimensional object, usually the view from directly above.

plane (KS3)	A flat surface. A line segment joining any two points in the surface will also lie in the surface.
plot (KS2)	The process of marking points. Points are usually defined by coordinates and plotted with reference to a given coordinate system.
plus (KS1)	A name for the symbol +, representing the operation of addition.
point (KS2)	An element, in geometry, that has position but no magnitude.
polygon (KS1)	A closed plane figure bounded by straight lines. The name derives from many angles. If all interior angles are less than 180° the polygon is convex. If any interior angle is greater than 180°, the polygon is concave. If the sides are all of equal length and the angles are all of equal size, then the polygon is regular; otherwise it is irregular. Adjective: polygonal.
polyhedron (KS2)	Plural: polyhedra. A closed solid figure bounded by surfaces (faces) that are polygonal. Its faces meet in line segments called its edges. Its edges meet at points called vertices. For a polyhedron to be convex, it must lie completely to one side of a plane containing any face. If it is not convex it is concave. A regular polyhedron has identical regular polygons forming its faces and equal angles formed by its surfaces and edges. The Platonic Solids are the five possible convex regular polyhedra: tetrahedron with four equilateral-triangular faces; cube with six square faces; octahedron with eight equilateral-triangular faces; dodecahedron with twelve regular- pentagonal faces; and icosahedron with twenty equilateral-triangular faces.
polynomial function (KS3)	A function of the form $f(x) = a_n X^n + a_{n-1} X^{n-1} + a_{n-2} X^{n-2} + ... + a_1X + a_0$ Is a polynomial of order n
positive number (KS2)	A number greater than zero. Where a point on a line is labelled 0 positive numbers are all those to the left of the zero and are read 'positive one, positive two, positive three' etc. See also directed number and negative number.

position (KS1)	Location as specified by a set of coordinates in a plane or in full 3-dimensional space. On the large scale, location on the earth is specified by latitude and longitude coordinates.
position-to-term rule (KS3)	In a sequence, a rule that defines the value of each term with respect to its position. Example: the n^{th} term of a sequence is defined by the relation un = 2n + 3. Then the terms of the sequence are: first term, $u_1 = 2 \times 1 + 3 = 5$ second term, $u_2 = 2 \times 2 + 3 = 7$ third term, $u_3 = 2 \times 3 + 3 = 9$ and the hundredth term, $u_{100} = 2 \times 100 + 3 = 203$
pound (mass) (KS2)	Symbol: lb. An imperial unit of mass. In the imperial system, 14 lb = 1 stone. 1 lb is approximately 455 grams. 1 kilogram is approximately 2.2 lb.
pound sterling (money) (KS1)	Symbol £. A unit of money. £1.00 = 100 pence. £1 is commonly called a pound.
power (of ten) (KS2)	1. 100 (i.e. 10^2 or 10 x 10) is the second power of 10, 1000 (i.e.10^3 or 10 x 10 x 10) is the third power of 10 etc. Powers of other numbers are defined in the same way. Example: 2 (2^1), 4 (2^2), 8 (2^3), 16 (2^4) etc are powers of 2. 2. A fractional power represents a root. Example: $x^{½} = \sqrt{x}$ 3. A negative power represents the reciprocal. Example: $x^{-1} = 1/x$ 4. By convention any number or variable to the power 0 equals 1. i.e. $x^0 = 1$
prime factor (KS2)	The factors of a number that are prime. Example: 2 and 3 are the prime factors of 12 (12 = 2 x 2 x 3). See also factor.
prime factor decomposition (KS2)	The process of expressing a number as the product of factors that are prime numbers. Example: $24 = 2 \times 2 \times 2 \times 3$ or $2^3 \times 3$. Every positive integer has a unique set of prime factors.

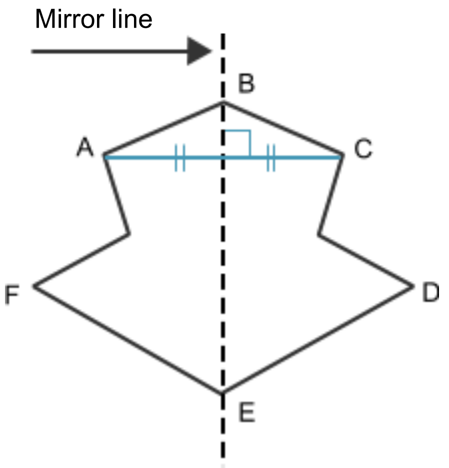
prime number (KS2)	A whole number greater than 1 that has exactly two factors, itself and 1. Examples: 2 (factors 2, 1), 3 (factors 3, 1). 51 is not prime (factors 51, 17, 3, 1).
priority of operations (KS2)	Generally, multiplication and division are done before addition and subtraction, but this can be ambiguous, so brackets are used to indicate calculations that must be done before the remainder of the operations are carried out. See order of operation
prism (KS1)	A solid bounded by two congruent polygons that are parallel (the bases) and parallelograms (lateral faces) formed by joining the corresponding vertices of the polygons. Prisms are named according to the base e.g. triangular prism, quadrangular prism, pentagonal prism etc. Examples:  If the lateral faces are rectangular and perpendicular to the bases, the prism is a right prism.
probability (KS3)	The likelihood of an event happening. Probability is expressed on a scale from 0 to 1. Where an event cannot happen, its probability is 0 and where it is certain its probability is 1. The probability of scoring 1 with a fair dice is $^{1}/_{6}$. The denominator of the fraction expresses the total number of equally likely outcomes. The numerator expresses the number of outcomes that represent a 'successful' occurrence. Where events are mutually exclusive and exhaustive the total of their probabilities is 1.
probability scale (KS3)	This is a scale between zero and 1, with zero representing the impossibility of an event and 1 representing the fact that the event must happen. The sum of all the probabilities for all the events in a sample space is 1, where the sample space is the set of all possible outcomes of a trial.
product (KS1)	The result of multiplying one number by another. Example: The product of 2 and 3 is 6 since 2 × 3 = 6.
projection (KS3)	A mapping of points on a 3-dimensional geometric figure onto a plane according to a rule. Example: A map of the world is a projection of some type such as Mercator's projection. Plan and elevation are vertical and horizontal mappings.

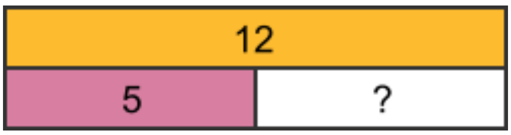
proof (KS2/3)	Using mathematical reasoning in a series of logical steps to show that if one mathematical statement is true then another that follows from it must be true. There are many forms of proof in mathematics, and some proofs are extremely complicated. Mathematics develops by using proof to develop evermore results that are true if certain basic axioms are accepted. Proof is fundamental to mathematics; it is important to be able to say that a result is true beyond any shadow of doubt. This power is unique to mathematics; no other discipline can do this. Example: Proof that the square of every even number is divisible by 4 Any even number by definition is divisible by 2, which means that every even number can be written as a multiple of 2. In symbols, this means that any even number has the form 2n, where n is some integer. Thus the square of this number is (2n) × (2n) and using the fact that multiplication is commutative this can be written as $2 \times 2 \times n \times n = 4 \times n^2 = 4n^2$ This is a multiple of 4 and so is divisible by 4.
proper fraction (KS2)	A proper fraction has a numerator that is less than its denominator So ¾ is a proper fraction, whereas $^4/_3$ is an improper fraction (i.e. not proper).
property (KS1)	Any attribute. Example: One property of a square is that all its sides are equal.
proportion (KS2/3)	1. A part to whole comparison. Example: Where £20 is shared between two people in the ratio 3 : 5, the first receives £7.50 which is $^3/_8$ of the whole £20. This is his proportion of the whole. 2. If two variables x and y are related by an equation of the form y = kx, then y is directly proportional to x; it may also be said that y varies directly as x. When y is plotted against x this produces a straight line graph through the origin. 3. If two variables x and y are related by an equation of the form xy = k, or equivalently y = k/x, where k is a constant and x ≠ 0, y ≠ 0 they vary in inverse proportion to each other
proportional reasoning (KS2)	Using the mathematics and vocabulary of ratio, proportion and hence fractions and percentages to solve problems.
Protractor (KS2)	An instrument for measuring angles.
Prove (KS2/3)	To formulate a chain of reasoning that establishes in conclusion the truth of a proposition. See proof.

pyramid (KS1)	A solid with a polygon as the base and one other vertex, the apex, in another plane. Each vertex of the base is joined to the apex by an edge. Other faces are triangles that meet at the apex. Pyramids are named according to the base: a triangular pyramid (which is also called a tetrahedron, having four faces), a square pyramid, a pentagonal pyramid etc.
Pythagoras' theorem (KS3)	In a right-angled triangle, the square of the length of the hypotenuse is equal to the sum of the squares of the lengths of the other sides i.e. the sides that bound the right angle. Example:  When $\angle DEF$ is a right angle, $a^2 + b^2 = h^2$
quadrant (KS2)	One of the four regions into which a plane is divided by the x and y axes in the Cartesian coordinate system.
quadratic (KS3)	Describing a expression of the form $ax^2 + bx + c$ where a, b and c are real numbers. The function $y = ax^2 + bx + c$ is a quadratic function; its graph is a parabola.
quadrilateral (KS1)	A polygon with four sides.
qualitative (KS3)	Relating to a quality or attribute.
quantitative (KS3)	Relating to quantity or amount.
quantity (KS1)	Something that has a numerical value, for example: 5 bananas.
quarter turn (KS1)	A rotation through 90º, usually anticlockwise unless stated otherwise.

quotient (KS2)	The result of a division. Example: 46 ÷ 3 = 15⅓ and 15⅓ is the quotient of 46 by 3. Where the operation of division is applied to the set of integers, and the result expressed in integers, for example 46 ÷ 3 = 15 remainder 1 then 15 is the quotient of 46 by 3 and 1 is the remainder.
radius (KS2)	In relation to a circle, the distance from the centre to any point on the circle. Similarly, in relation to a sphere, the distance from the centre to any point on the sphere.
random sample (KS3)	In statistics, a selection from a population where each sample of this size has an equal chance of being selected.
random variable (KS3)	In statistics, a discrete or continuous quantity which can take on a range of values each of which has a certain probability of occurrence; for example, the ages of a group of people (continuous), or the number of pets in different households (discrete).
range (KS3)	A measure of spread in statistics. The difference between the greatest value and the least value in a set of numerical data.
rate (KS2)	A measure of how quickly one quantity changes in comparison to another quantity. For example, speed is a measure of how distance travelled changes with time; the average speed of a moving object is the total distance travelled/ time taken to travel that distance. Acceleration is a measure of the rate at which the speed of a moving object changes as time passes. The rate of inflation is a measure of the change in the buying power of money over a given time period.
ratio (KS2)	A part to part comparison. The ratio of a to b is usually written a : b. Example: In a recipe for pastry fat and flour are mixed in the ratio 1 : 2 which means that the fat used has half the mass of the flour, that is amount of fat/amount of flour = ½. Thus ratios are equivalent to particular fractional parts.
ratio notation (KS2)	a : b can be changed into the unitary ratio 1 : b/a , or the unitary ratio a/b : 1. Any ratio is also unchanged if any common factors can be divided out.

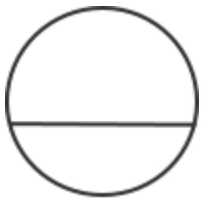
rational number (KS2)	A number that is an integer or that can be expressed as a fraction whose numerator and denominator are integers, and whose denominator is not zero. Examples: − 1, ⅓, $^{3}/_{5}$, 9, 235. Rational numbers, when expressed as decimals, are recurring decimals or finite (terminating) decimals. Numbers that are not rational are irrational. Irrational numbers include $\sqrt{5}$ and π which produce infinite, non-recurring decimals.
raw data (KS3)	Data as they are collected, unprocessed.
real numbers	A number that is rational or irrational. Real numbers are those generally used in everyday contexts, but in mathematics, or the physical sciences, or in engineering, or in electronics the number system is extended to include what are known as complex numbers. In school mathematics to key stage 4 all the mathematics deals with real numbers. Integers form a subset of the real numbers.
reciprocal (KS2)	The multiplicative inverse of any non-zero number. Any non-zero number multiplied by its reciprocal is equal to 1. In symbols $x \times 1/x = 1$, for all $x \neq 0$. Multiplying by $1/x$ is the same as dividing by x, and since division by zero is not defined zero has to be excluded from all other numbers that all have a reciprocal.
rectangle (KS1)	A parallelogram with an interior angle of 90°. Opposite sides are equal. If adjacent sides are also equal the rectangle is a square. If adjacent sides are not equal, the rectangle is sometimes referred to as an oblong. A square is a (special type) of rectangle but a rectangle is not a square. The use of the word ‘oblong’ (favoured by some) resolves this issue. An oblong is a rectangle which is not square.
rectilinear (KS2)	Bounded by straight lines. A closed rectilinear shape is also a polygon. A rectilinear shape can be divided into rectangles and triangles for the purpose of calculating its area.
recurring decimal (KS2)	A decimal fraction with an infinitely repeating digit or group of digits. Example: The fraction ⅓ is the decimal 0.33333 …, referred to as nought point three recurring and may be written as 0.3 (with a dot over the three). Where a block of numbers is repeated indefinitely, a dot is written over the first and last digit in the block e.g. $^{1}/_{7} = 0.\dot{1}4285\dot{7}$
reduce (a fraction) (KS3)	Divide the numerator and denominator by a common factor. To cancel a fraction. Example: divide the numerator and denominator by 5, to reduce $^{5}/_{15}$ to ⅓, its simplest form.

reflection (KS2)	In 2-D, a transformation of the whole plane involving a mirror line or axis of symmetry in the plane, such that the line segment joining a point to its image is perpendicular to the axis and has its midpoint on the axis. A 2-D reflection is specified by its mirror line.
reflection symmetry (KS2)	A 2-D shape has reflection symmetry about a line if an identical-looking object in the same position is produced by reflection in that line. Example:  In the shape ABCDEF, the mirror line runs through B and E. The part shape BCDE is a reflection of BAFE. Point A reflects onto C and F onto D. The mirror line is the perpendicular bisector of AC and of FD.
reflex angle (KS3)	An angle that is greater than 180o but less than 360°.
regular (KS2)	1. Describing a polygon, having all sides equal and all internal angles equal. 2. Describing a tessellation, using only one kind of regular polygon. Examples: squares, equilateral triangles and regular hexagons all produce regular tessellations.
relation, relationship (KS1)	A common property of two or more items. An association between two or more items.
remainder (KS2)	In the context of division requiring a whole number answer (quotient), the amount remaining after the operation. Example: 29 divided by 7 = 4 remainder 1.

repeated addition (KS1)	The process of repeatedly adding the same number or amount. One model for multiplication. Example 5 + 5 + 5 + 5 = 5 x 4.
repeated subtraction (KS1)	The process of repeatedly subtracting the same number or amount. One model for division. Example 35 -5 - 5 - 5 - 5 - 5 - 5 - 5 = 0 so 35 ÷ 5 = 7 remainder 0.
representation (KS2)	The word ‘representation’ is used in the curriculum to refer to a particular form in which the mathematics is presented, so for example a quadratic function could be expressed algebraically or presented as a graph; a quadratic expression could be shown as two linear factors multiplied together or the multiplication could be expanded out; a probability distribution could be presented in a table or represented as a histogram, and so on. Very often, the use of an alternative representation can shed new light on a problem. An array is a useful representation for multiplication and division which helps to see the inverse relationship between the two. The Singapore Bar Model is a useful representation of for many numerical problems. e.g. Tom has 12 sweets and Dini has 5. How many more sweets does Tom have than Dini? 
rhombus (KS2)	A parallelogram with all sides equal.
RHS (KS3)	Abbreviation for ‘right angle, hypotenuse, side’ describing one of the sets of conditions for congruence of two triangles. Also sometimes used as an abbreviation for ‘right hand side; when referring to equations.
right (KS2)	Used as an adjective, right-angled or erect. Example: In a right cylinder the centre of one circular base lies directly over the centre of the other.

right angle (KS2)	One quarter of a complete turn. An angle of 90 degrees. An acute angle is less than one right angle. An obtuse angle is greater than one right angle but less than two. A reflex angle is greater than two right angles.
Roman numerals (KS2)	The Romans used the following capital letters to denote cardinal numbers: I for 1; V for 5; X for 10; L for 50; C for 100; D for 500; M for 1000. Multiples of one thousand are indicated by a bar over a letter, so for example V with a bar over it means 5000. Other numbers are constructed by forming the shortest sequence with this total, with the proviso that when a higher denomination follows a lower denomination the latter is subtracted from the former. Examples: III =3; IV = 4; XVII =17; XC = 90; CX =110; CD = 400; MCMLXXII = 1972. A particular feature of the Roman numeral system is its lack of a symbol for zero and, consequently, no place value structure. As such it is very cumbersome to perform calculations in this number system.
rotation (KS1)	In 2-D, a transformation of the whole plane which turns about a fixed point, the centre of rotation. A is specified by a centre and an (anticlockwise) angle.
rotation symmetry (KS2)	A 2-D shape has rotation symmetry about a point if an identical-looking shape in the same position is produced by a rotation through some angle greater than 0° and less than 360° about that point. A 2-D shape with rotation symmetry has rotation symmetry of order n when n is the largest positive integer for which a rotation of $^{360°}/_{n}$ produces an identical-looking shape in the same position. A rotation of 360°, about any centre whatever, produces an identical-looking shape in the same position for all 2-D shapes including those without rotation symmetry. For this reason it is true, though not very informative, to say that the order of rotation symmetry is 1 for shapes that do not have rotation symmetry.
round (verb) (KS2)	In the context of a number, express to a required degree of accuracy. Example: 543 rounded to the nearest 10 is 540.
row	A horizontal arrangement.

rule (KS1)	Generally a procedure for carrying out a process. In the context of patterns and sequences a rule, expressed in words or algebraically, summarises the pattern or sequence and can be used to generate or extend it.
sample (KS2)	A subset of a population. In handling data, a sample of observations may be made from which to draw inferences about a larger population.
sample space (KS3)	The sample space is the set of all possible outcomes of a trial. The sum of all the probabilities for all the events in a sample space is 1.
scale (noun)	A measuring device usually consisting of points on a line with equal intervals.
scale (verb) (KS2)	To enlarge or reduce a number, quantity or measurement by a given amount (called a scale factor). e.g. to have 3 times the number of people in a room than before; to find a quarter of a length of ribbon; to find 75% of a sum of money.
scale drawing or model (KS3)	An accurate drawing, or model, of a representation of a physical object in which all lengths in the drawing are in the same ratio to corresponding lengths in the actual object (depending on whether the object exists in a plane or in 3 dimensions). Most maps are scaled drawings of some physical region. If the ratio of map distance to location distance is known any distance on the map can be converted to actual distance in the region represented by the map.
scale factor (KS2)	For two similar geometric figures, the ratio of corresponding edge lengths.
scalene triangle (KS3)	A triangle with no two sides equal and consequently no two angles equal.
scatter graph (KS3)	A graph on which paired observations are plotted and which may indicate a relationship between the variables. Example: The heights of a number of people could be plotted against their arm span measurements. If height is roughly related to arm span, the points that are plotted will tend to lie along a line.
score (KS1)	1. To earn points or goals in a competition. The running total of points or goals. 2. The number twenty.

second (KS1)	1. A unit of time. One-sixtieth of a minute. 2. Ordinal number as in 'first, second, third, fourth …'.
section (plane section) (KS3)	A plane geometrical configuration formed by cutting a solid figure with a plane. Example: A section of a cube could be a triangle, quadrilateral, pentagon or hexagon according to the direction of the plane cutting it.
sector (KS3)	The region within a circle bounded by two radii and one of the arcs they cut off. Example:  The smaller of the two sectors is the minor sector and the larger one the major sector.
segment (KS3)	The part of a line between two points. Within a circle, the region bound by an arc and the chord joining its two end points. Example:  The smaller of the two regions, is the minor segment and the larger is the major segment.
sequence (KS1)	A succession of terms formed according to a rule. There is a definite relation between one term and the next and between each term and its position in the sequence. Example: 1, 4, 9, 16, 25 etc.
set (KS1)	A well-defined collection of objects (called members or elements).

set square (KS2)	A drawing instrument for constructing parallel lines, perpendicular lines and certain angles. A set square may have angles 90°, 60°, 30° or 90°, 45°, 45°.
share (equally) (KS1)	Sections of this page that are currently empty will be filled over the coming weeks. One model for the process of division.
short division (KS2)	A compact written method of division. Example: 496 ÷ 11 becomes $\begin{array}{r\|l} & 4\ \ 5\ \ \mathrm{r}\,1 \\ \hline 1\ \ 1 & 4\ \ 9\ {}^{5}6 \end{array}$ Answer : 45 $^{1}/_{11}$ (Example taken from Appendix 1 of the Primary National Curriculum for Mathematics)
short multiplication (KS2)	Essentially, simple multiplication by a one digit number, with the working set out in columns. 342 x 7 becomes $\begin{array}{cccc} & 3 & 4 & 2 \\ \times & & & 7 \\ \hline 2 & 3 & 9 & 4 \\ \hline & {}_{2} & {}_{1} & \end{array}$ Answer: 2394 (Example taken from Appendix 1 of the Primary National Curriculum for Mathematics)
side (KS1)	A line segment that forms part of the boundary of a figure. Also edge.
sign (KS1)	A symbol used to denote an operation. Examples: addition sign +, subtraction sign −, multiplication sign ×, division sign ÷, equals sign = etc. In the case of directed numbers, the positive + or negative − sign indicates the direction in which the number is located from the origin along the number line.

sign change key (KS3)	The function key +/− of a calculator that changes a positive value to negative or vice versa.
significant figures (KS3)	The run of digits in a number that are needed to specify the number to a required degree of accuracy. Additional zero digits may also be needed to indicate the number's magnitude. Examples: To the nearest thousand, the numbers 125 000, 2 376 000 and 22 000 have 3, 4 and 2 significant figures respectively; to 3 significant figures 98.765 is written 98.8
simple fraction (KS1)	A fraction where the numerator and denominator are both integers. Also known as <u>common fraction</u> or <u>vulgar fraction</u>.
simple interest (KS3)	In savings (or loans) banks pay (or charge) interest on the amount invested (or borrowed). An interest rate is usually specified, and this is applied at specified periods, for example annually. The simple interest is what is added to the savings (loan) at the end of the specified period. Example: a saver invests £10000 in a savings account that gives 1% interest per year. At the end of the year the simple interest is 1% of £10000 = £10000 × 1/100 = £100. Usually, this is then added to the original £10000, so that the amount now invested is £10100. When interest is added over and over again in this way it is called compound interest.
simplify (a fraction) (KS2)	Reduce a fraction to its simplest form. See <u>cancel (a fraction)</u> and <u>reduce (a fraction).</u>
simultaneous equations (KS3)	Two linear equations that apply simultaneously to given variables. The solution to the simultaneous equations is the pair of values for the variables that satisfies both equations. The graphical solution to simultaneous equations is a point where the lines representing the equations intersect. e.g. $x + y = 6$ and $y = 2x$ is a set of simultaneous equations. The solution is the value of x and y which satisfies both simultaneously – i.e. $x = 2$ and $y = 4$
sine (KS3)	See <u>trigonometric functions</u>

sort (KS1)	To classify a set of entities into specified categories.
speed (KS3)	A measure of how the distance travelled by a moving object changes with time. The average speed of a moving object is defined as the total distance travelled/ time taken to travel that distance. The units of speed are length/ time, for example kilometres per hour, or metres per second.
sphere (KS2)	A closed surface, in three-dimensional space, consisting of all the points that are a given distance from a fixed point, the centre. A hemi-sphere is a half-sphere. Adjective: spherical
spread (KS3)	In a series of measurements of a particular variable, the spread is the difference between the lowest value and the highest value of the variable.
square (KS1)	1. A quadrilateral with four equal sides and four right angles. 2. The square of a number is the product of the number and itself. Example: the square of 5 is 25. This is written 52 = 25 and read as five squared is equal to twenty-five. See also square number and square root.
square centimetre (KS2)	Symbol: cm^2. A unit of area, a square measuring 1 cm by 1 cm. 10000 cm^2 = 1 m^2
square metre (KS2)	Symbol: m^2. A unit of area, a square measuring 1m by 1 m.
square millimetre (KS2)	Symbol: mm^2. A unit of area, a square measuring 1 mm by 1 mm. One-hundredth part of a square centimetre and one-millionth part of a square metre.
square number (KS2)	A number that can be expressed as the product of two equal numbers. Example 36 = 6 x 6 and so 36 is a square number or “6 squared”. A square number can be represented by dots in a square array.
square root (KS3)	A number whose square is equal to a given number. Example: one square root of 25 is 5 since $5^2 = 25$. The square root of 25 is recorded as $\sqrt{25} = 5$. However, as well as a positive square root, 25 has a negative square root, since $(-5)^2 = 25$.

standard index form (KS3)	A form in which numbers are recorded as a number between 1 and 10 multiplied by a power of ten. Example: 193 in standard index form is recorded as 1.93×10^2 and 0.193 as 1.93×10^{-1} This form is often used as a succinct notation for very large and very small numbers.
standard unit (KS1)	Uniform units that are agreed throughout a community. Example: the metre is a standard unit of length. Units such as the handspan are not standard as they vary from person to person.
subject of a formula (KS3)	A formula relates different physical variables in a mathematical way. Example: A pendulum of length L takes a time T to complete one two and fro motion. T and L are related by the formula $T = 2\pi\sqrt{(L/g)}$, where g is a constant. As presented, T is the subject of this formula. However it is easy to make L the subject of the formula through the following manipulation: $T/2\pi = \sqrt{(L/g)}$ $(T/2\pi)^2 = \sqrt{(L/g)} \times \sqrt{(L/g)} = L/g$ $L = g(T/2\pi)^2$ Note: Here multiplication and division are inverse operations to each other; one undoes the other. Similarly, squaring and taking the square root are also inverses to each other, with one undoing the other.
substitution (KS3)	Numbers can be substituted into an algebraic expression in x to get a value for that expression for a given value of x. For example, when $x = -2$, the value of the expression $5x^2 - 4x + 7$ is $5(-2)^2 - 4(-2) + 7 = 5(4) + 8 + 7 = 35$.
subtract (KS1)	Carry out the process of subtraction
subtraction (KS1)	The inverse operation to addition. Finding the difference when comparing magnitude. Take away.

subtraction by decomposition (KS2)	A method of calculation used in subtraction and particularly linked with one of the main columnar methods for subtraction. In this method the number to be subtracted from (the minuend) is re-partitioned, if necessary, in order that each digit of the number to be subtracted (the subtrahend) is smaller than its corresponding digit in the minuend. e.g. in 739 – 297, only the digits in the hundreds and the ones columns are bigger in the minuend than the subtrahend. By re-partitioning 739 into 6 hundreds, 13 tens and 9 ones each separate subtraction can be performed simply, i.e.: 9 – 7 13 (tens) – 9 (tens) and 6 (hundreds) – 2 (hundreds). $\begin{array}{rrrr} & {}^{6}\cancel{7} & {}^{1}1 & 9 \\ - & 2 & 9 & 7 \\ \hline & 4 & 2 & 2 \end{array}$
subtraction by equal addition	A method of calculation used in subtraction and particularly linked with one of the main columnar methods for subtraction. This method relies on the understanding that adding the same quantity to both the minuend and the subtrahend retains the same difference. This is a useful technique when a digit in the subtrahend is larger than its corresponding digit in the minuend. E.g. in the example below, 7 > 2, therefore 10 has been added to the 2 (in the ones place) of the minuend to make 12 (ones) and also added to the 5 (tens) of the subtrahend to make 60 (or 6 tens) before the first step of the calculation can be completed. Similarly 100 has been added to the 3 (tens) of the minuend to make 13 (tens) and also added to the 4 (hundreds) of the subtrahend to make 5 (hundred). 932-457 becomes $\begin{array}{rrrr} & 9 & {}^{1}3 & {}^{1}2 \\ - & \cancel{4}_{5} & \cancel{5}_{6} & 7 \\ \hline & 4 & 7 & 5 \\ \hline \end{array}$ Answer: 475 Example taken from Appendix 1 of the Primary National Curriculum for Mathematics

subtrahend (KS1)	A number to be subtracted from another. See also Addend, dividend and multiplicand.
sum (KS1)	The result of one or more additions.
supplementary angles (KS3)	Two neighbouring angles whose sum is 180°. When two lines intersect each other the resulting adjacent angles are supplementary.
surd (KS3)	1. An irrational number expressed as the root of a natural number. Examples: $3\sqrt{2}$. 2. A numerical expression involving irrational roots. Example: $3 + 2\sqrt{7}$.
surface (KS1)	A set of points defining a space in two or three dimensions.
symbol (KS1)	A letter, numeral or other mark that represents a number, an operation or another mathematical idea. Example: L (Roman symbol for fifty), > (is greater than).
symmetry (KS1)	A plane figure has symmetry if it is invariant under a reflection or rotation i.e. if the effect of the reflection or rotation is to produce an identical-looking figure in the same position. See also reflection symmetry, rotation symmetry. Adjective: symmetrical.
table (KS1)	1. An orderly arrangement of information, numbers or letters usually in rows and columns. 2. See multiplication table
take away (KS1)	1. Subtraction as reduction 2. Remove a number of items from a set.

<table>
<tr><td>tally

(KS1)</td><td>Make marks to represent objects counted; usually by drawing vertical lines and crossing the fifth count with a horizontal or diagonal strike through.

A Tally chart is a table representing a count using a Tally

<table>
<tr><th colspan="3">Favourite Pets</th></tr>
<tr><th>Pet</th><th>Tally Marks</th><th>Number</th></tr>
<tr><td>Cat</td><td>𝍸 𝍸</td><td>10</td></tr>
<tr><td>Dog</td><td>𝍷𝍷𝍷𝍷</td><td>4</td></tr>
<tr><td>Rabbit</td><td>𝍸 𝍷</td><td>6</td></tr>
</table></td></tr>
<tr><td>tangent

(KS3)</td><td>A line is a tangent to a curve when it meets the curve in one and only one point – e.g. the tangent of a circle (insert image)

See <u>trigonometric functions</u>.</td></tr>
<tr><td>temperature

(KS1)</td><td>A measure of the hotness of a body, measured by a thermometer or other form of heat sensor.

Two common scales of temperature are the Fahrenheit scale (°F) and the Celsius (or centigrade scale) which measures in °C. These scales have reference points for the freezing point of water (0°C or 32°F) and the boiling point of water (100°C or 212°F).

The relation between °F and °C is °F = 9/5(°C) + 32.</td></tr>
<tr><td>terminating decimal

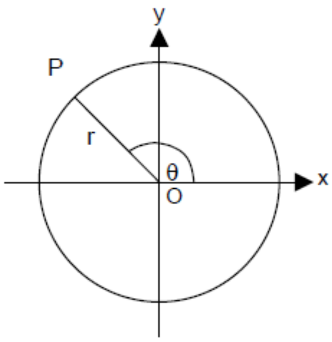
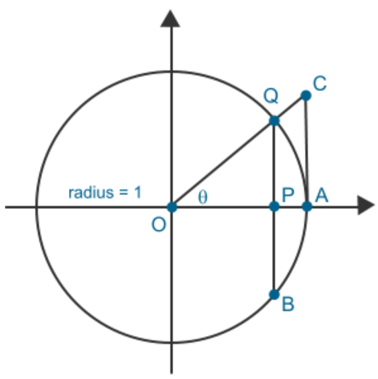
(KS2)</td><td>A decimal fraction that has a finite number of digits. Example: 0.125 is a terminating decimal. In contrast ⅓ is a recurring decimal fraction. All terminating decimals can be expressed as fractions in which the denominator is a multiple of 2 or 5.</td></tr>
<tr><td>term-to-term rule

(KS3)</td><td>An algebraic rule to generate the successive terms of a sequence, in terms of the immediately preceding term or terms. The starting term (or terms) is (are) needed to set the sequence going.
Commonly, a subscript is used to denote the position of the term, with u_r term in the rth position. Thus $u_{r+1} = au_r$, with $u_1 = 1$ is the geometric series 1, a, a^2, a^3, and so on.</td></tr>
<tr><td>tetrahedron

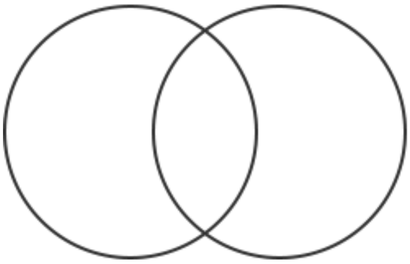
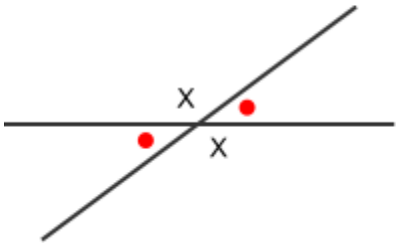
(KS2)</td><td>A solid with four triangular faces. A regular tetrahedron has faces that are equilateral triangles. Plural: tetrahedra</td></tr>
</table>

theorem (KS3)	A mathematical statement derived from premises and established by means of a proof.
theoretical probability (KS3)	The probability of the result of a trial calculated from a model based on theoretical considerations rather than on calculations of probability based on counting experimental frequencies of occurrence. For example, with an unbiased coin with two possible outcomes, 'head' or 'tail', on each toss it would be expected that each side of the coin had an equal probability of showing uppermost. The theoretical probability for a 'head' is 0.5, as is the theoretical probability for a 'tail'. If the coin is actually tossed many, many times and the proportion of heads to the total number of outcomes is calculated from the observation, the experimental probability may differ from exactly 0.5, and if there is any major bias, it will differ significantly from the theoretically expected value.
time (KS1)	1. Progress from past, to present and to future 2. Time of day, in hours, minutes and seconds; clocks and associated vocabulary 3. Duration and associated vocabulary 4. Calendar time in days, weeks, months, years 5. Associated vocabulary such as later, earlier, sooner, when, interval of time, clock today, yesterday, tomorrow, days of the week, the 12 months of a year, morning, a.m., afternoon, p.m., noon, etc.
total (KS1)	1. The aggregate. Example: the total population - all in the population. 2. The sum found by adding.
transformation (KS3)	A change that is, or is equivalent to, a change in the position or direction of the coordinate axes
translation (KS2)	A transformation in which every point of a body moves the same distance in the same direction. A transformation specified by a distance and direction (vector).
trapezium (KS2)	A quadrilateral with exactly one pair of sides parallel.
triangle (KS1)	A polygon with three sides. Adjective: triangular, having the form of a triangle.

triangular number (KS1)	1. A number that can be represented by a triangular array of dots with the number of dots in each row from the base decreasing by one. Example:  The triangular number 10 represented as a triangular array of dots. 2. A number in the sequence 1, 1 + 2, 1 + 2 + 3, 1 + 2 + 3 + 4 etc. 55 is a triangular number since it can be expressed as, 1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10.

trigonometric functions (KS3)	Functions of angles. The main trigonometric functions are cosine, sine and tangent. Other functions are reciprocals of these.  Trigonometric functions (also called the circular functions) are functions of an angle. They relate the angles of a triangle to the lengths of its sides. The most familiar trigonometric functions are the sine, cosine, and tangent In the context of the standard unit circle with radius 1 unit, where a triangle is formed by a ray originating at the origin and making some angle with the x-axis, the sine of the angle gives the length of the y-component (rise) of the triangle, the cosine gives the length of the x-component (run), and the tangent function gives the slope (y-component divided by the x-component). Trigonometric functions are commonly defined as ratios of two sides of a right triangle containing the angle, and can equivalently be defined as the lengths of various line segments from a unit circle. $\cos A = {}^{b}/_{c}$ $\sin A = {}^{a}/_{c}$ $\tan A = \frac{\sin A}{\cos A} = \frac{a}{b}$ 
turn (KS1)	A rotation about a point: a quarter turn is a rotation of 90°. A half turn is a rotation of 180°, a whole turn is a rotation of 360°.

uniform (KS3)	Not changing. Remaining constant.
unit (KS1)	A standard used in measuring e.g. the metre is a unit of length; the degree is a unit of turn/angle, etc.
unit fraction (KS1)	A fraction that has 1 as the numerator and whose denominator is a non-zero integer. Example: ½, ⅓
unit pricing (KS3)	Used in marketing and sales, the unit price is the price for one item, from which the price of any quantity of that item can easily be calculated by multiplication of the unit price by the number of items of that type that are required.
unitary ratio (KS3)	See ratio.
union of two sets (KS3)	The set of elements that belong to either, or both, of a given pair of se The union of two sets A and B is written as A U B.
universal set (KS3)	As far as the curriculum is concerned, the set that contains all the relevant items of interest in a given context. The union of any set and its complement set (all those elements not in the former set).
variable (KS3)	A quantity that can take on a range of values, often denoted by a letter, x, y, z, t, … etc.

venn diagram (KS3)	A simple visual diagram to describe used to describe the relationships between two sets. With two or three sets each set is often represented by a circular region. The intersection of two sets is represented by the overlap region between the two sets. With more than three sets Venn diagrams can become very complicated. The boundary of the Venn Diagram represents the Universal Set of interest. Venn Diagram 
vertex (KS1)	The point at which two or more lines intersect. Plural: vertices.
vertical (KS1)	At right angles to the horizontal plane. The up-down direction on a graph or map.
vertically opposite angles (KS2)	The pair of equal angles between two intersecting straight lines. There are two such pairs of vertically opposite angles 
volume (KS1)	A measure of three-dimensional space. Usually measured in cubic units; for example, cubic centimetres (cm^3) and cubic metres (m^3).
vulgar fraction (KS2)	A fraction in which the numerator and denominator are both integers. Also known as <u>common fraction</u> or <u>simple fraction.</u>
weight (KS1)	In everyday English weight is often confused with mass. In mathematics, and physics, the weight of a body is the force exerted on the body by the gravity of the earth, or any other gravitational body.

yard (KS2)	Symbol: yd. An imperial measure of length. In relation to other imperial units of length, 1 yard = 3 feet = 36 inches. 1760yd. = 1 mile One yard is approximately 0.9 metres.
zero (KS1)	1. Nought or nothing; zero is the only number that is neither positive nor negative. 2. Zero is needed to complete the number system. In our system of numbers : $a - a = 0$ for any number a. $a + (-a) = 0$ for any number a; $a + 0 = 0 + a = a$ for any number a; $a - 0 = a$ for any number a; $a \times 0 = 0 \times a = 0$ for any number a; division by zero is not defined as it leads to inconsistency. 3. In a place value system, a place-holder. Example: 105. 4. The cardinal number of an empty set.